ORDER NO. DAD84070097C0

A-2

Service Manual

Turntable System

SL-J3

Color	Area
(S)	[M] ...U.S.A.
(S)	[MC]...Canada.
(S)(K)	[E] ...Switzerland and Scandinavia.
(S)(K)	[EK] ...United Kingdom.
(S)(K)	[XL] ...Australia.
(S)(K)	[EG] ...F.R. Germany.
(S)(K)	[EB] ...Belgium.
(S)(K)	[EH] ...Holland.
(S)(K)	[EF] ...France.
(S)(K)	[Ei] ...Italy.
(S)(K)	[EC] ...Czechoslovakia.
(S)(K)	[XA] ...Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(S)(K)	[XM]...Central South America.
(S)(K)	[PC] ...European Audio Club.

T4P is the standard mark for the "P-mount" plug-in-connector system. Products carrying this mark are inter-changeable and compatible with each other.

Color

(S)...Silver Type
(K)...Black Type

English

Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

■ General

Power supply: For U.S.A. and Canada: 120V AC, 60Hz
For United Kingdom and Australia: 240V AC, 50Hz
For Continental Europe: 220V AC, 50Hz
For others: ~110—120/220—240V, 50 or 60Hz

Power consumption: For Continental Europe: 11W
For others: 13W

Dimensions: (W × H × D) 31.5 × 8.8 × 31.5 cm
(12-13/32″ × 3-15/32″ × 12-13/32″)
(Maximum height when dust cover is open.)
39cm (15-11/32″)

Weight: 4.1kg (9 lb.)

■ Turntable section

Type: Quartz direct drive
Fully automatic turntable

Features: Auto start/Auto lead-in
Auto return
Auto stop
Repeat play
Program play
Direct music select play
Forward and backward search play
Auto speed select
Manual speed selection possible
Auto size select
Record presence detection

Drive method: Direct drive

Motor: Brushless DC motor

Drive control method: Quartz-phase-locked control

Turntable platter: Aluminum die-cast
Diameter 30 cm (12")

Turntable speeds: 33-1/3 rpm and 45 rpm
Auto speed select
(Manual selection possible)

Wow and flutter: 0.012% WRMS*
0.025% WRMS (JIS C5521)
±0.035% peak
(IEC 98A Weighted)

*Measured by obtaining signal from built-in frequency generator of motor assembly.

Rumble: −56 dB (IEC 98A Unweighted)
−78 dB (IEC 98A Weighted)

Technics

Tonearm section

Type:	Linear tracking tonearm 4-pivot gimbal suspension
Effective length:	10.5 cm (4-1/8")
Tracking error angle:	Within ±0.1°
Effective mass:	9 g (including cartridge)
Resonance frequency:	12 Hz
Tonearm drive motor:	DC motor
Phono cable capacitance:	150 pF

Cartridge section (Except for U.S.A. and Canada)

Type:	Moving magnet stereo cartridge
Magnetic circuit:	All laminated core
Frequency response:	10~35kHz (For European Audio Club) 10Hz~50kHz (For others) 20 Hz ~ 10 kHz ±1 dB
Output voltage:	2.5 mV at 1 kHz 5 cm/s. zero to peak lateral velocity (7 mV at 1 kHz, 10 cm/s. zero to peak 45° velocity [DIN 45 500])
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 1.8 dB at 1 kHz
Recommended load impedance:	47 kΩ~100 kΩ
Compliance (dynamic):	12×10^{-6}cm/dyne at 100 Hz
Stylus pressure range:	1.25±0.25 g (12.5±2.5 mN)
Weight:	6 g (cartridge only)
Replacement stylus:	EPS-28ES (For European Audio Club) EPS-33ES (For others)

- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.
  - ★ 120V (60 Hz) for U.S.A and Canada.
  - ★ 220V (50 Hz) for Continental Europe.
  - ★ 240V (50 Hz) for United Kingdom and Australia.
  - ★ 110V-120V/220V-240V (50/60 Hz) for other areas.
  - ★ [EK], [XA], [XM], and [PC] areas are provided with voltage selector.

Deutch

TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind circa Werte.

Allgemeine Daten

Stromversorgung:	~220 V, 50 Hz Wechselstrom
Leistungsaufnahme:	11 W
Abmessungen: (B × H × T)	31,5 × 8,8 × 31,5 cm 31,5 × 39 × 31,5 cm (Maximale Höhe bei vollständig geöffnetem Gehäuseoberteil)
Gewicht:	4,1kg

Plattenteller

Typ:	Vollautomatischer Plattenspieler mit Quarz-Direktantrieb
Eigenschaften:	Auto-Start/Auto-Zuführung Rückführautomatik Stopautomatik Wiederholtes Abspiel Programmierbare Musikstück-Auswahl Abspiel mit Direktmusikwahl Vorwärts-und Rückwärtssprungabspiel Vorwärts- und Rückwartssuchspiel Automatische Drehzahlwahl Manuelle Drehzahlwahl möglich Autom.Plattengrößewahl Schallplattendetektion
Antrieb:	Direktantrieb
Motor:	Kollektorloser Gleichstrommotor
Antriebsregel-Methode:	Quarz-Steuerung QPL
Plattenteller:	Aluminium-Druckguß Durchmesser 30 cm
Plattenteller-Drehzahlen:	33-1/3 und 45 U./min. Automatische Drehzahlwahl (manuelle Wahl möglich)
Gleichlaufschwankungen:	0,012% WRMS* 0,025% WRMS (JIS C5521) ±0,035% Spitze (IEC 98A bewertet)

*Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorteils.

Rumpeln:	−56 dB (IEC 98A unbewertet) −78 dB (IEC 98A bewertet)

Tonarm

Typ:	Linearabtastungs-Tonarm mit Kardan-aufhängung mit 4-Punkt-Drehlager
Effektive Länge:	10,5 cm
Spurfehlwinkel:	Innerhalb ±0,1°
Effektive Masse:	9 g (einschließlich Tonabnehmer)
Resonanzfrequenz:	12 Hz
Tonarm-Antriebsmotor:	Gleichstrommotor
Phonokabel-Kapazität:	150 pF

■ Tonabnehmer

Typ:	Stereo-Magnet-Tonabnehmer
Magnetkreis:	Ganzlamellenkern
Frequenzgang:	10 Hz bis 50 kHz 20 Hz bis 10 kHz ±1 dB
Ausgangsspannung:	2,5 mV bei 1 kHz 5 cm/s. Null-zu-Spitze, lateral [7 mV bei 1 kHz 10 cm/s. Null-zu-Spitze, 45° (DIN 45 500)]
Kanaltrennung:	22 dB bei 1 kHz
Kanalabweichung:	Innerhalb 1,8 dB bei 1 kHz
Empfohlene Endimpedanz:	47 kΩ~100 kΩ
Nachgiebigkeit (dynamisch):	12×10^{-6}cm/dyn bei 100 Hz
Auflagekraft-Einstellbereich:	1,25±0,25 g (12,5±2,5 mN)
Gewicht:	6 g (nur Tonabnehmer)
Ersatznadel:	EPS-33ES

Français

CARACTERISTIQUES

Les spécifications sont susceptibles d'étre modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

■ Généralités

Alimentation:	Alternatif 220 V, 50 Hz
Consommation:	11W
Dimensions: (L × H × P)	31,5 × 8,8 × 31,5 cm 31,5 × 39 × 31,5 cm (Hauteur maximum lorsque le dessus (couvercle protège-poussière) est ouvert.)
Poids:	4,1kg

■ Platine de lecture

Type:	Entraînement direct par quartz Platine entièrement automatique
Caractéristiques:	Démarrage automatique/Entrée automatique Retour automatique Arrêt automatique Audition répétée Sélection de plages programmable Audition sélectionnée musicale directe Audition par saut vers l'avant et vers l'arrière Audition de recherche vers l'avant et vers l'arrière Sélecteur de vitesse automatique Sélection mauelle possible Sélection automatique du diamètre des disques Détection de la présence d'un disque.
Système d'entraînement:	Entraînement direct
Moteur:	Moteur C.C. sans balai
Système de commande d'entraînement:	Réglage d'accrochage de phase par quartz
Plateau de lecture:	Aluminium moulé sous pression Diamètre 30 cm
Vitesses de la platine:	33-1/3 et 45 t/p.m. Sélecteur de vitesse automatique (Sélection manuelle possible)
Pleurage et scintillement:	0,012% de valeur efficace* 0,025% de valeur efficace (JIS C5521) ±0,035% de crête (IEC 98A Pondéré)

*Mesuré par l'obtention d'un signal provenant du générateur de fréquences incorporé de l'ensemble du moteur.

Ronflement:	−56 dB (IEC 98A Non pondéré) −78 dB (IEC 98A Pondéré)

■ Bras de lecture

Type:	Bras de lecture d'alignement linéaire de type à suspension à la cardan à 4 pivots
Longueur effective:	10,5 cm
Angle d'erreur de piste:	En deçà de ±0,1°
Masse réelle:	9 g (y compris la cellule pick-up)
Fréquence de résonance:	12 Hz
Moteur d'entraînement du bras de lecture:	Moteur C.C.
Capacitance du câble phono:	150 pF

■ Cellule pick-up

Type:	Cellule pick-up stéréo à aimant mobile
Circuit magnétique:	Noyau entièrement feuilleté
Réponse en fréquence:	10 Hz à 50 kHz 20 Hz à 10 kHz ±1 dB
Tension de sortie:	2,5 mV à 1 kHz; 5 cm/s. zéro à vitesse latérale de crête (7 mV à 1 kHz; 10 cm/s. zéro à vitesse 45° de crête [DIN 45 500])
Séparation des canaux:	22 dB à 1 kHz
Equilibrage des canaux:	En deçà de 1,8 dB à 1 kHz
Impédance de charge recommandée:	47 kΩ~100 kΩ
Elasticité (dynamique):	12×10^{-6}cm/dyne à 100 Hz
Plage de la force verticale d'appui:	1,25±0,25 g (12,5±2,5 mN)
Poids:	6 g (cellule seule)
Remplacement de la pointe de lecture:	EPS-33ES (Forme elliptique)

Español

ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
Los pesos y las dimensiones indicados son aproximativos.

■ En general

Alimentación de corriente:	~220 V, 50 Hz
Consumo de corriente:	11 W
Dimensiones: (Ancho × Alto × Prof.)	31,5 x 8,8 x 31,5 cm 31,5 x 39 x 31,5 cm (Altura máxima cuando la tapa contra el polvoestá abierta.)
Peso:	4,1 kg

■ Sección del plato giratorio

Tipo:	Plato giratorio totalmente automático por accionamiento directo controlado por cuarzo.
Ventajas:	Arranque/descenso automáticos Retorno automático Parada automática Ejecución repetida Selección programable de bands Ejecución con selección directa de la música Ejecución saltando hacia adelante o hacia atrás Ejecución con búsqueda hacia adelante o hacia atrás Selección automática de la velocidad También posibilidad de seleccionar a mano Selección automática de tamaño Detección de presencia de discos
Método de accionamiento:	Accionamiento directo
Motor:	Motor de corriente continua sin escobillas
Método de contról de accionamiento:	Control enclavado de fase de cuarzo
Platillo del plato giratorio:	Aluminio fundido 30 cm de diámetro
Velocidades del plato giratorio:	33-1/3 y 45 rpm Selección automática de la velocidad (También posibilidad de seleccionar a mano)
Ululaciones y trémolo:	0,012% WRMS* 0,025% WRMS (JIS C5521) ± 0,035% cresta (IEC 98A Ponderado)

* Medido obteniendo una señal proveniente del generador de frecuencias incorporado del conjunto del motor.

Ruido de rodadura:	−56 dB (IEC 98A Non ponderado) −78 dB (IEC 98A ponderado)

■ Sección del brazo sonoro

Tipo:	Brazo sonoro de seguimiento lineal de tipo con equilibrio dinámico con suspensión cardánica de 4-pivotes
Longitud efectiva:	10,5 cm
Angulo de error de seguimiento:	Inferiro a 0,1° aproxim.
Masa efectiva:	9 g (incluyendo el cartucho)
Frecuencia de resonancia:	12 Hz
Motor de accionamiento del brazo sonoro:	Motor de corriente continua
Capitancia del cable del fonógrafo:	150 pF

■ Sección del cartucho

Tipo:	Cartucho estereofónido de imán móvil
Circuito magnético:	Núcleo totalmente laminado
Respuesta de frecuencia:	10kHz a 50kHz 20 Hz a 10 kHz ± 1 dB
Voltaje de salida:	2,5 mV a 1 kHz Velocidad lateral de cero a cresta de 5 cm/s. (7 mV a 1 kHz. Velocidad de 45° de cero a cresta de 10 cm/s. [DIN 45 000])
Separación de canales:	22 dB a 1 kHz
Equilibrio de canales:	Inferior a 1,8 dB a 1 kHz
Impedancia de carga recomendada:	47 kΩ a 100 kΩ
Elasticidad (dinámica):	12×10^{-6} cm/dina a 100 Hz
Radio de presión de la aguja:	1,25 ± 0,25 g (12,5 ± 2,5 mN)
Peso:	6 g (cartucho solamente)
Aguja de recambio:	EPS-33ES

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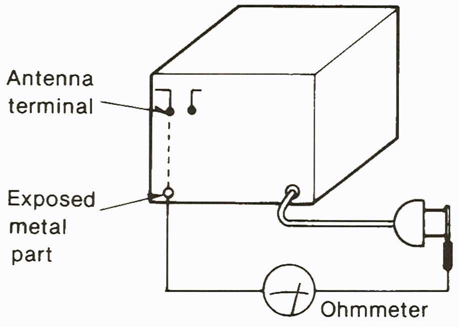
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

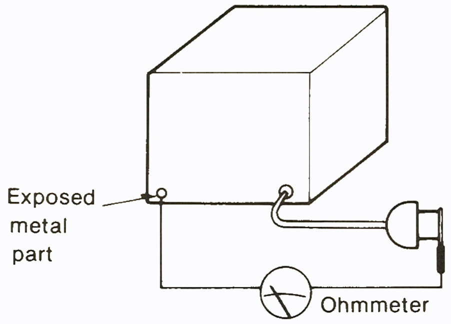
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.


Antenna terminal
Exposed metal part
Ohmmeter

(Fig. A)

Resistance = 3 MΩ—5.2 MΩ

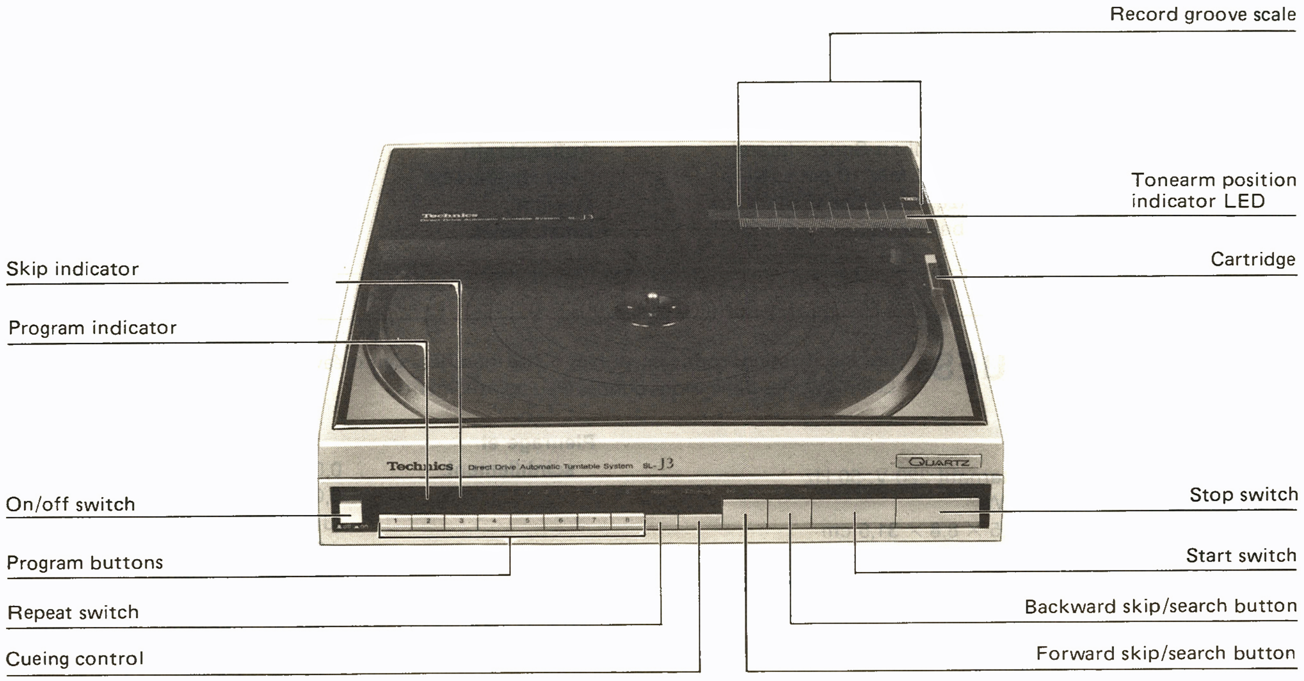

Exposed metal part
Ohmmeter

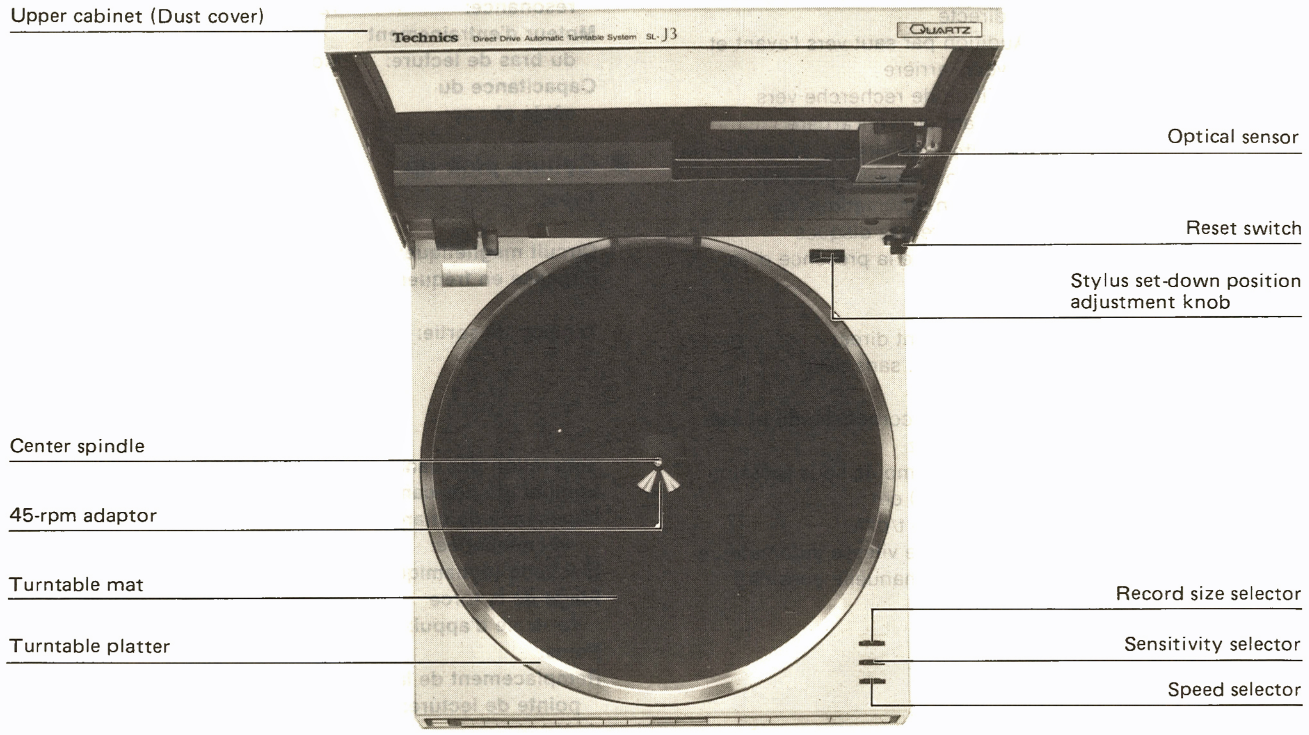
(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS


Record groove scale
Tonearm position indicator LED
Cartridge
Skip indicator
Program indicator
On/off switch
Stop switch
Program buttons
Start switch
Repeat switch
Backward skip/search button
Cueing control
Forward skip/search button
Technics
Direct Drive Automatic Turntable System SL-J3
QUARTZ


Upper cabinet (Dust cover)
Optical sensor
Reset switch
Stylus set-down position adjustment knob
Center spindle
45-rpm adaptor
Turntable mat
Record size selector
Turntable platter
Sensitivity selector
Speed selector
Technics
Direct Drive Automatic Turntable System SL-J3
QUARTZ

■ TECHNICAL INFORMATION

The stylus tip lowering function (cueing, muting operation) of SL-J3 during program selection is different from conventional programmed players (SL-6, Q6, QL15, etc) because it is free from misoperation in deflected record.

Operation of conventional type (See Fig. 1.)

- **Normal operation [Fig. 1-①]**

Muting turns OFF (sound is made) after stylus tip is lowered between tunes (0.45 sec. later in SL-6). After the end of play, muting turns ON (sound is stopped) before stylus tip is lifted from the record (0.2 sec. earlier in SL-6).

- **Head-missing and tail-missing due to deflected record [Fig. 1- ②, ③]**

Stylus tip is lowered at the end of preceding tune or the beginning of the tune and is lifted during the tune or at the beginning of the next tune.

Note: Muting operation timing is the same as normal operation timing, and it causes head-missing and tail-missing.

Operation of SL-J3 (See Fig. 2.)

- The stylus tip is lowered a little earlier (about 0.5 mm) than the preceding tune. At that time, no sound is made as muting is ON. Next, tonearm speed detector (blank is detected as tonearm moves faster between tunes) turns ON to detect the blank between tunes.

  After that, muting turns OFF to start playing. Before the end of play, the speed detector turns ON and after detecting the blank between turns, muting turns ON and then the stylus tip is lifted.
- When stylus tip is lowered as in **Fig. 2**-①, ③ on deflected record, muting turns OFF after detection of blank by speed detector, and there is no head-missing.

  Also during lifting operation, muting turns OFF after detection of blank, and there is no tail-missing.

Note: The stylus tip lowering position of SL-J3 is different from that of convertional type, and the time until sound is made after lowering of stylus tip is a little longer. Therefore, it takes about 5 ~ 20 sec. until the sound is actually produced after lowering of the stylus.

Fig. 1

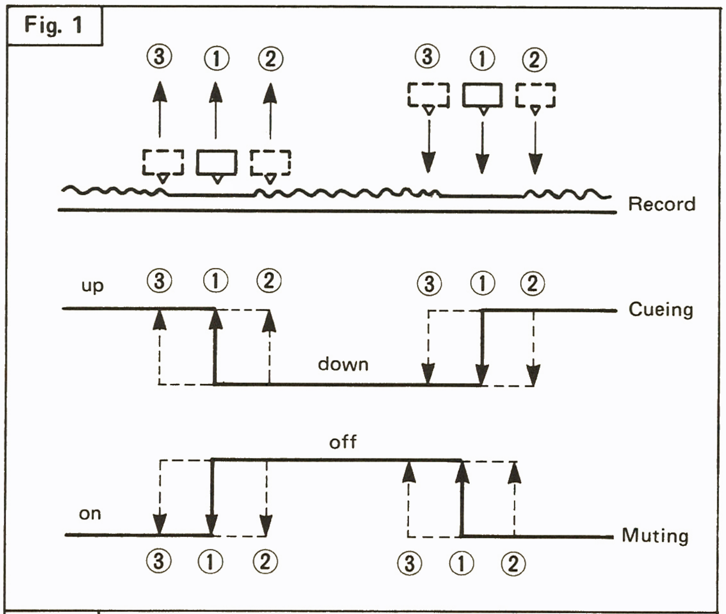
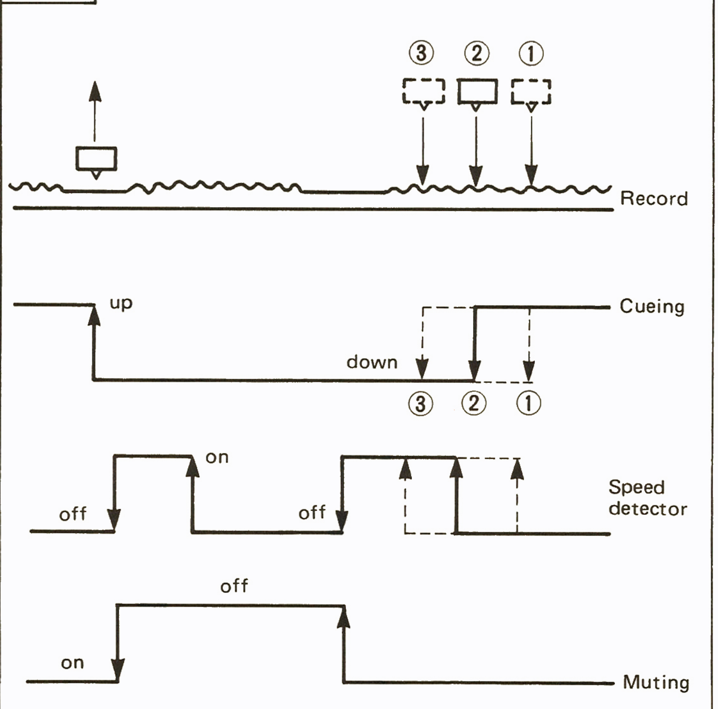


Fig. 2



Note: Speed detector functions only when sensor sensitivity selector switch is in "M" and "L" positions.

■ DISASSEMBLY INSTRUCTIONS

• How to remove the cartridge

1. Open the upper cabinet.
2. Down the tonearm by finger in order to make cueing down position.
3. Remove the cartridge setscrew (**Fig. 1**: ❶), and pull out the cartridge.

Note: When attaching the cartridge again, match the tonearm connector with the cartridge pins, then completely insert it and tighten the screw.

• How to remove the turntable platter

1. Open the upper cabinet.
2. Remove the turntable mat, and lift the turntable platter. (**Fig. 2**)

Note:

(1) When removing the turntable platter, it is not necessary to remove the 45 r.p.m. adaptor.

(2) The turntable platter is tight fitted on to the center spindle. When removing the turntable platter, take care not to give damage to the upper cabinet, arm motor cover and tonearm cover.

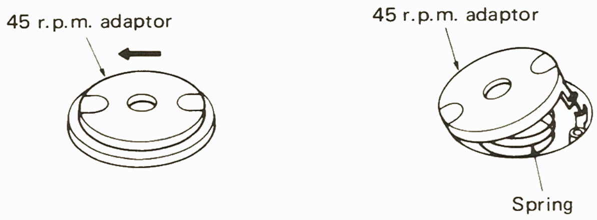


Fig. 3

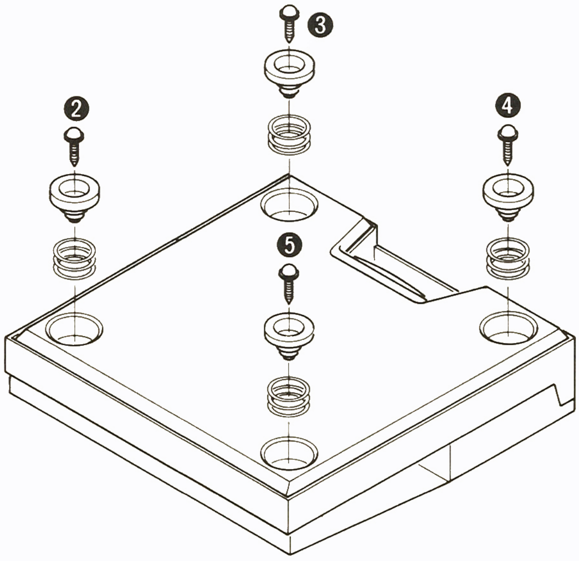


Fig. 4

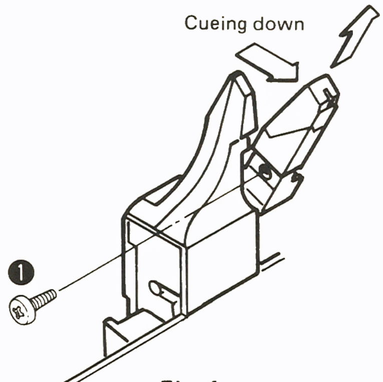


Fig. 1

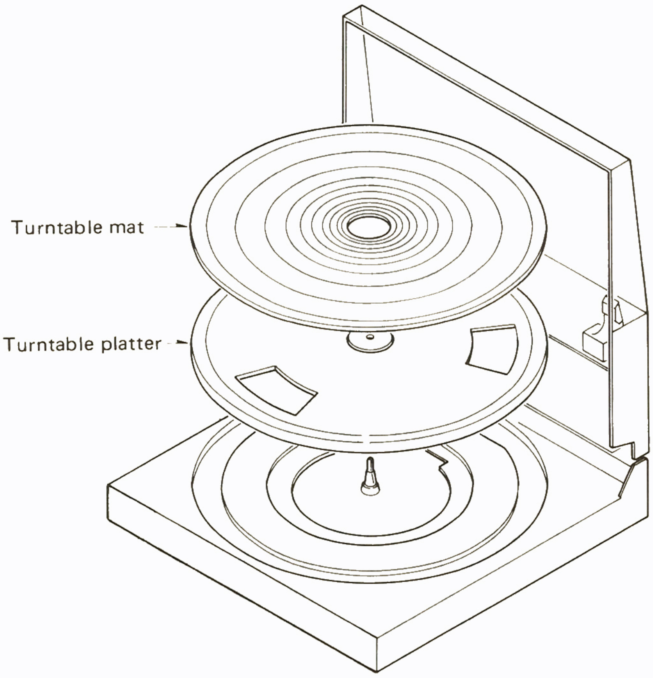


Fig. 2

• How to remove the 45 r.p.m. adaptor (Fig. 3)

1. Remove the turntable platter. (**Refer to "How to remove the turntable platter".**)
2. Turn the 45 r.p.m. adaptor counter clockwise to raise it from the turntable platter surface.
3. Push the claw by the blade screwdriver in the direction of the arrow, then remove the 45 r.p.m. adaptor.

Note: When removing the 45 r.p.m. adaptor, remove the turntable platter, otherwise the 45 r.p.m. adaptor claws will be broken.

• How to remove the bottom board

1. Remove the turntable platter. (**Refer to "How to remove the turntable platter".**)
2. Close the upper cabinet and turn over the unit on a soft cloth taking care not to damage the upper cabinet.
3. Remove the 4 bottom board setscrews. (**Fig. 4**: ❷ ~ ❺).

• How to remove the main circuit board

1. Remove the bottom board. **(Refer to "How to remove the bottom board.")**
2. Remove the select switch holder setscrew **(Fig. 5 : ⑥)** and the select switch holder. **(Fig. 5)**
3. Remove the 5 main circuit board setscrews **(Fig. 6 : ⑦ ~ ⑪)**
4. Pull out the power switch knob from the power switch rod. Then, lift the main circuit board in the direction of the arrow Ⓐ.

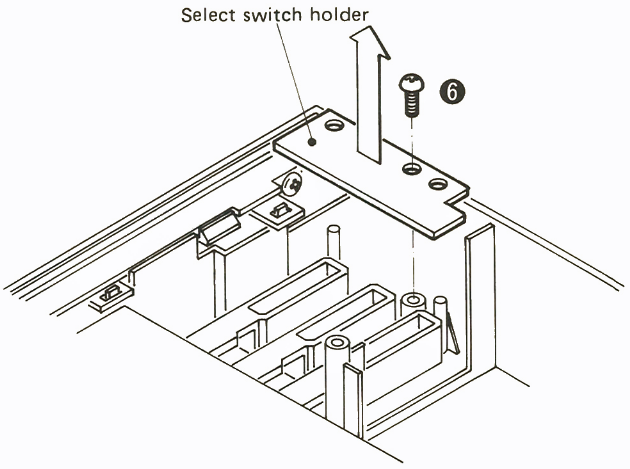

Select switch holder
⑥

Fig. 5

• How to remove the operation button and program button

1. Remove the main cirucit board. **(Refer to "How to remove the main circuit board".)**
2. Remove the 2 connectors (**Fig. 6** : CN302 and CN304), and then, lift the front panel in the direction of the arrowⒷ. **(Fig. 6)**
3. Remove the 3 operation circuit board setscrews **(Fig. 7 : ⑫ ~ ⑭)**.
4. Release the 5 claws, then the operation circuit board can be removed.
5. Release the 4 claws and gently pull the operation button.
6. Remove the 3 program circuit board setscrews **(Fig. 7 : ⑮ ~ ⑰)**.
7. Release the 3 claws, the program circuit board can be removed.
8. Release the 3 claws and gently pull the program button.

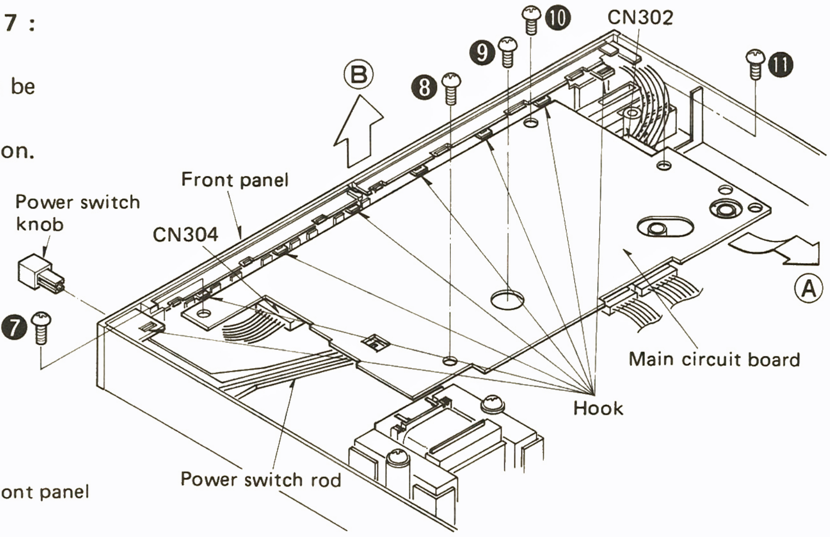

⑩
CN302
⑨
Ⓑ
⑧
⑪
Front panel
Power switch knob
CN304
⑦
Ⓐ
Main circuit board
Hook
Power switch rod

Fig. 6

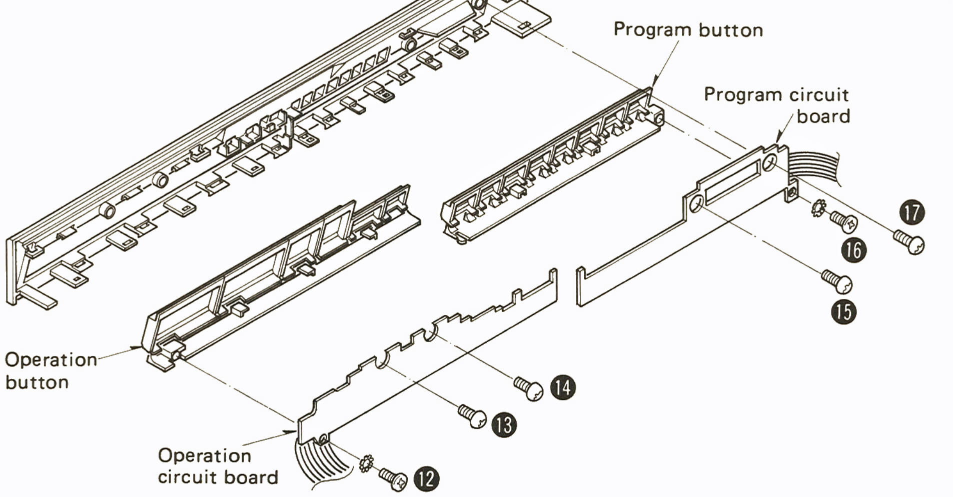

Front panel
Program button
Program circuit board
⑰
⑯
⑮
Operation button
⑭
⑬
Operation circuit board
⑫

Fig. 7

• How to remove the stator frame and drive circuit board

1. Remove the main circuit board. (**Refer to "How to remove the main circuit board."**)
2. Remove the 3 stator frame setscrews (**Fig. 8**: ⑱ ~ ⑳) and the 2 drive circuit board setscrews (**Fig. 8**: ㉑ , ㉒).
3. Cut off the stopper by nippers and remove the 4 setscrews (**Fig. 9**: ㉓ ~ ㉖) to separate the stator frame and drive circuit board.

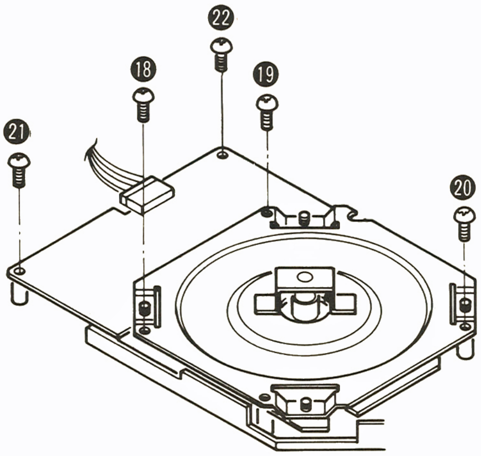


Fig. 8

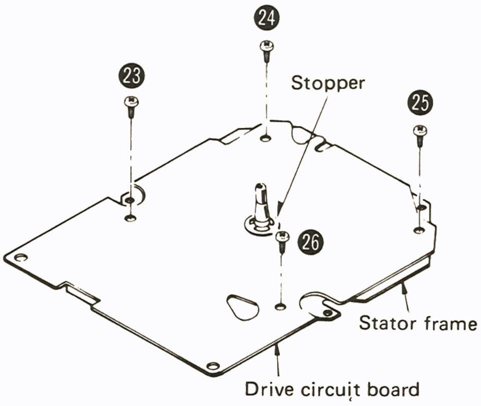

㉔
㉓
Stopper
㉕
㉖
Stator frame
Drive circuit board

Fig. 9

• How to remove the reset switch

1. Remove the bottom board. (**Refer to "How to remove the bottom board"**)
2. Remove the switch holder setscrew (**Fig. 10**: ㉗).
3. Release the 2 claws of switch holder and remove the reset switch circuit board.
4. Unsolder the 2 switch terminals, then the reset switch can be removed.

Note: When replacing the reset switch, be sure to open the upper cabinet.

• How to remove the Hall element

1. Remove the turntable platter.
2. Remove the terminal solder by use of solder sucker.
3. Hold the Hall element with a tweezers and remove it while touching the soldering iron to the terminal. (**Fig. 11**)

• How to remove the dust cover

1. Pull out the 4 right and left rivets and 2 right and left rivet holders. (**Fig. 12**)
2. Lift the dust cover in the direction of the arrow. (**Fig. 12**) Then the dust cover can be removed.

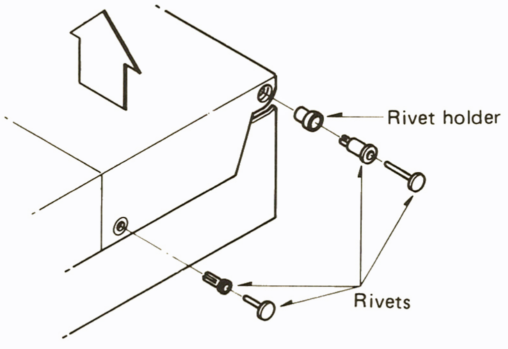

Rivet holder
Rivets

Fig. 12

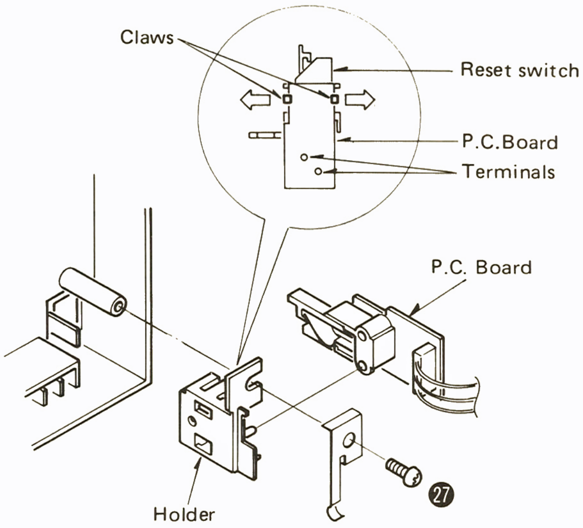

Claws
Reset switch
P.C.Board
Terminals
P.C. Board
Holder
㉗

Fig. 10

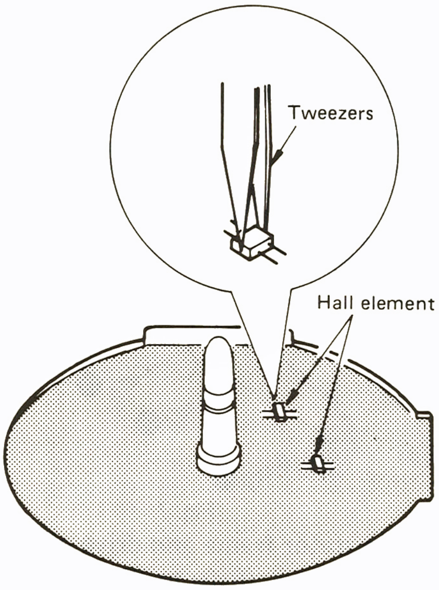

Tweezers
Hall element

Fig. 11

• How to remove the tonearm

1. Remove the dust cover. **(Refer to "How to remove the dust cover.")**
2. Remove the shield cover setscrew **(Fig. 13 : ㉘)** and shield cover.
3. Unsolder the 5 lead wires from Tonearm.
4. Turn the worm gear by finger to move the tonearm center inward.
5. Remove the tonearm setscrew. **(Fig. 14 : ㉙)**
6. Remove the guide rail clamper, and pull out the guide rail, the remove the tonearm in the direction of the arrow Ⓐ.

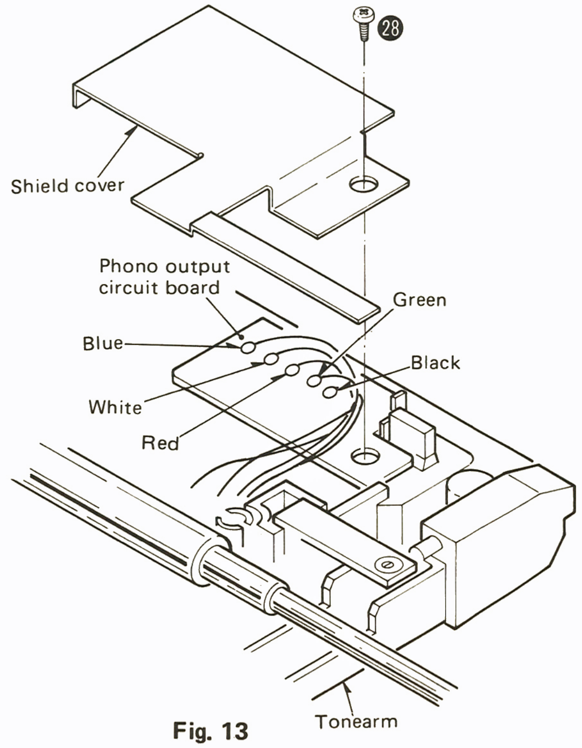


Fig. 13

• How to remove the offset angle detection circuit board

1. Remove the dust cover. (**Refer to "How to remove the dust cover."**)
2. Remove the indicator cover setscrew **(Fig. 14: ㉚)** and the indicator cover in the direction of the arrow Ⓑ **(Fig. 14)**
3. Remove the offset angle detection circuit board adjustment screw **(Fig. 14: ㉛**), then the offset angle detection circuit board can be removed.

Note: When replacing the offset angle detection circuit board, be sure to adjust the servo gain and offset voltage.

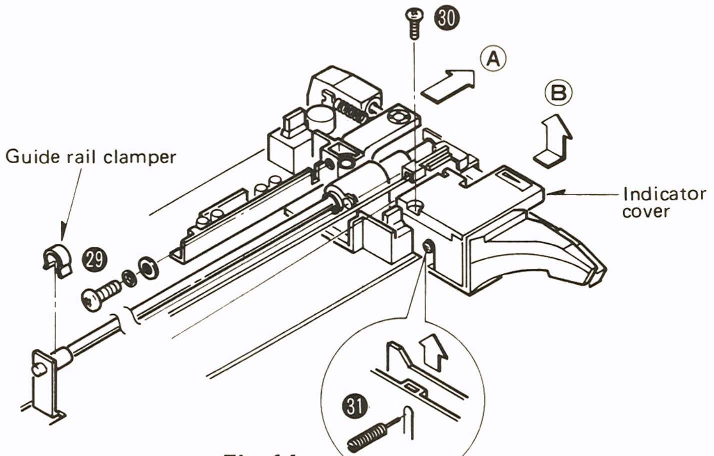


Fig. 14

■ HOW TO SET THE TONEARM DRIVE ROPE

When setting the rope, follow the procedure given below.

1. Remove the dust cover and tonearm cover. **(Refer to "How to remove the dust cover.")**
2. Remove the roller cover. **(Fig. 15)**
3. Set the rope in the order of 1 ~ 5 **(Fig. 15)**
4. Fit the rope connector to the tonearm.
5. Set the roller cover and turn the worm gear by hand to see that the tonearm moves.

Note: The arm drive wheel is not fixed. So, take care not to let is come loose during servicing. (Stop it with C-ring to prevent its removal.)

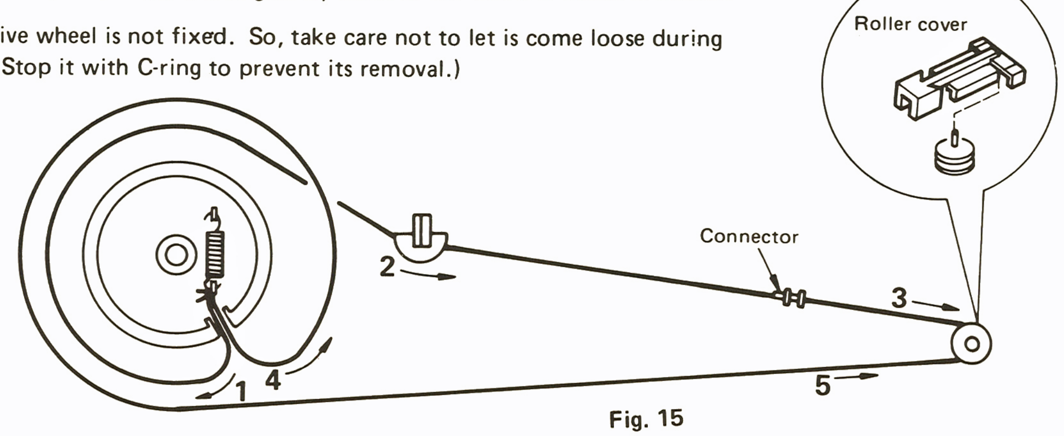


Fig. 15

■ MEASUREMENTS AND ADJUSTMENT English

• Equipment used and condition of the set

1. Oscilloscope
2. DC voltmeter
3. Record (SFTR007) for adjustment
4. Set the optical sensor sensitivity selector to "M".

Step	Item	Preparations for adjustment	Adjusting portion	Adjusting method
1	**Start position**	1. Open the upper cabinet and put on the record. 2. Turn the power switch on. 3. Push the "start" switch.	Start position adjusting screw **(Fig. 16)**	• Turn the start position adjusting screw. If it descends between turnes, turn the screw counter clockwise.
2	**Sensor gain**	1. Connect the DC voltmeter to IC401 12-pin (+) and 14-pin (—). 2. Put on the record for adjustment with side A up. 3. Close the upper cabinet.	VR401 **(Fig. 17)**	1. Turn the power switch on. 2. Tonearm is on the rest position. (Blank area of the record.) 3. Adjust VR401 so that the output voltage is 8.5V ± 0.3V.
3	**Sensor resolution**	1. Connect the oscilloscope to IC401 9-pin (+) and 14-pin (—). 2. Put on the record for adjustment with side A up. 3. Close the upper cabinet.	VR402 **(Fig. 17)**	1. Turn the power switch on. 2. Keep the F skip switch depressed to move the tonearm. (Output is delivered between the turnes.) 3. Adjust VR402 so that the peak output between tunes is 3V ± 0.3V. **(Fig. 18)**
4	**Stylus cue-down position**	1. Connect lead wire with clip to CN301 6-pin to 2-pin of operation circuit board. (Muting operation stops.) 2. Open the upper cabinet and hold the cabinet switch with tape. 3. Put on the record for adjustment with side B up. 4. Close the upper cabinet. 5. Connect the unit to the amplifier. (Connect the speakers to the speaker terminals.)	VR302 **(Fig. 16)**	1. Turn the power switch on. 2. Push the program key 2, followed by start switch. 3. After completion of cueing down, push the program key 2 for the purpose of skipping. 4. Make sure the descending position is at count "15". 5. Adjust VR302 so that the decending position is at count "15".
5	**Tonearm offset angle**	1. Remove the dust cover. (Refer to "DISASSEMBLY INSTRUCTION"). 2. Open the upper cabinet and hold the cabinet switch with tape. 3. Close the upper cabinet. 4. Put on the record.	Adjusting screw **(Fig. 19)**	1. Turn the power switch on. 2. Keep the F skip switch depressed to move the tonearm. 3. Turn the adjusting screw so that the arm center matches the V-groove of the of the lift bar.
6	**Servo gain and offset voltage**	1. Remove the dust cover. (Refer to "DISASSEMBLY INSTRUCTION") 2. Open the upper cabinet and hold the cabinet switch with tape. 3. Connect the DC voltmeter to CN301 5-pin (+) and 2-pin (—). 4. Remove the sensor cover.	VR501 (Servo gain) Screw (Offset voltage) **(Fig. 20)**	1. Turn the power switch on. 2. Keep the F skip switch depressed to move the tonearm. 3. Open the upper cabinet. 4. Completely shift the tonearm to the left. Then, adjust VR501 so that the voltage is 3.6V (Servo gain) 5. Set the tonearm to the center and make sure the output voltage is 1.8V. 6. If the voltage is not 1.8V, adjust screw so that the output voltage is 1.8V. (Offset voltage)

■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

• Verwendete Geräte und Zustand des Gerätes

1. Oszilloskop
2. Gleichstrom-Voltmeter
3. Plate (SFTR007) für Justierung
4. Den Empfindlichkeits-Wahlschalter des optischen Sensors auf "M" stellen.

Schritt	Gegenstand	Vorbereitungen für die Justierung	Zu justierende Teile	Justiermethode
1	**Startposition**	1. Das Gehäuseoberteil öffnen und die Platte auflegen. 2. Den Ein/Aus-Schalter einschalten. 3. Den Startschalter drücken.	Absenkpositions-Justierschraube **(Abb. 16)**	• Die Startposition-Justierschraube drehen. Falls er zwischen Musikstücken absenkt, die Schraube entgegen dem Uhrzeigersinn drehen.
2	**Sensorverstärkung**	1. Gleichstrom-Voltmeter an IC401, Stift 12 (+) und Stift 14 (—) anschließen. 2. Die Platte für Justierung mit Seite A auflegen. 3. Das Gehäuseoberteil schlißen.	VR401 **(Abb. 17)**	1. Den Ein/Aus-Schalter einschalten. 2. Der Tonarm ist in der Ruheposition. (Unbespielter Teil der Platte.) 3. VR401 so abgleichen, daß die Ausgangsspannung 8,5V ± 0,3V verträgt.
3	**Sensorauflösung**	1. Das Oszilloskop an IC401, Stift 9 (+) und Stift 14 (—) anschließen. 2. Die Platte für Justierung mit Seite A auflegen. 3. Das Gehäuseoberteil schlißen.	VR402 **(Abb. 17)**	1. Den Ein/Aus-Schalter einschalten. 2. Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. (Ausgangsleistung tritt auf zwischen den Musikstücken.) 3. VR402 so abgleichen, daß die maximale Ausgangsleistung zwischen den Musikstücken 3V ± 0,3V beträgt. **(Abb. 18)**
4	**Nadel-Absenkposition**	1. Leistungsdraht mit Klemme an CN301, Shift 6 und Shift 2 der Betriebs-Platine anschließen. (Stummschal tungsbetrieb stoppt.) 2. Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren. 3. Die Platte für Justierung mit Seite B auflegen. 4. Das Gehäuseoberteil schließen. 5. Das Gerät an den Verstärker anschließen. (Die Lautsprecher an die Lautsprecher-Anschlüsse anschließen.)	VR302 **(Abb. 16)**	1. Den Ein/Aus-Schalter einschalten. 2. Die Programmtaste 2 und anschließend den Startschalter drücken. 3. Nach Beendigung des Liftbetriebs die Programmtaste 2 zum Zwecke des Überspringens drücken. 4. Überprüfen, daß die Absenkposition bei "15" liegt' 5. VR302 so justieren, daß die Absenkposition bei "15" auf der Skala ist.
5	**Tonarm-Spurfehlwinkel**	1. Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".) 2. Das Gehäuseoberteil öffnen und den Gehäuseschalte mit Klebband in der gedrückten Stellung arretieren. 3. Das Gehäuseoberteil schließen. 4. Eine Platte auflegen.	Justierschraube **(Abb. 19)**	1. Den Ein/Aus-Schalter einschalten. 2. Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. 3. Die Justierschraube so weit drehen, daß die Tonarmmitte mit der V-Kerbe der Liftstange übereinstimmt.
6	**Servo-Verstärkung und Offsetspannung**	1. Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".) 2. Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren. 3. Das Gleichstrom-Voltmeter an CN301, Stift 5 (+) und Stift 2 (—) anschließen. 4. Die Sensorabdeckung entfernen.	VR501 (Servo Verstärkung) Schraube (Offset-Spannung) **(Abb. 20)**	1. Den Ein/Aus-Schalter einschalten. 2. Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. 3. Das Gehäuseoberteil öffnen. 4. Den Tonarm ganz nach links bewegen. Dann VR501 so justieren, daß die Spannung 3,6V beträgt. (Servo-Verstärkung) 5. Den Tonarm zur Mitte him stellen und überüfen, daß die Ausgangsspannung 1,8V beträgt. 6. Falls die Spannung nicht 1,8V betragt, ist die Schraube so zu justieren, daß die Ausgangsspannung 1,8V beträgt. (Offset-Spannung)

■ MESURAGES ET REGLAGES — Français

• Equipement utilisé et conditions de service de l'appareil

1. Oscilloscope
2. Voltmètre à C.C.
3. Disque (SFTR007) pour la mise au point
4. Régler le sélecteur de sensibilité de détecteur optique sur "M".

Etape	Artiele	Préparatifs pour la réglage	Portion du réglage	Méthode de mise au point
1	**Position de démarrage**	1. Ouvrir la boîtier supérieur et installer un disque. 2. Mettre en circuit l'interrupteur d'alimentation. 3. Appuyer sur la touche "Start" (mise en marche).	Vis d'ajustement de la position descendante. **(Fig. 16)**	• Tourner la vis de réglage du positionnement de démarrage. Si elle descend entre les plages, la tourner dans le sens inverse des aiguilles d'une montre.
2	**Gain du dispositif dérecteur**	1. Raccorder le voltmètre à C.C. à la broche 12 (+) et à la broche 14 (—) de IC401. 2. Installer le disque pour la mise au point avec le côté A vers le haut. 3. Refermer le boîtier supérieur.	VR401 **(Fig. 17)**	1. Mettre en marche l'interrupteur d'alimentation. 2. Le bras de lecture est à la position de repos. (Zone vierge du disque.) 3. Ajuste VR401 de telle sorte que la tension de sortie soit de 8,5V ± 0,3V.
3	**Résolution du dispositif détecteur**	1. Raccorder l'oscilloscope à la broche 9 (+) et à la broche 14 (—) de IC401. 2. Installer le disque pour la mise au point avec le côté A vers la haut. 3. Refermer le boîtier supérieur.	VR402 **(Fig. 17)**	1. Mettre en circuit l'interrupteur d'alimentation. 2. Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. (La puissance de sortie est déliverée entre les plages.) 3. Ajuster VR402 de telle sorte que la puissance de crête entre les plages soit de 3V ± 0,3V. (Fig. 18)
4	**Position de pose/ relevage de la pointe de lecture**	1. Raccorder le filde jonction avec attache à la broche 2 et à la broche 6 de CN301 du circuit de fonctionnement. (Arrête fonctionnement de l'accord silencieux.) 2. Ouverir le boîtier supérieur et mainetenir appuyée la tocueh du boîtier avec une bande adhésive. 3. Installer le disque pour la mise au point avec le côté B vers le haut. 4. Refermer le boîtier supérieur. 5. Raccorder l'appareil à o'amplificateur. (Raccorder les haut-parleurs aux bornes des hautparleurs.)	VR302 **(Fig. 16)**	1. Mettee en circuit l'interrupteur d'alimentation. 2. Appuyer respectivement sur la touche de programmation 2 et sur la touche de mise en marche. 3. Après l'achèvement de la pose, appuyer sur la touche de programmation 2 dans le but d'opèrer un saut. 4. S'assurer que la position descendante est au compte de "15". 5. Régler VR302 de telle sorte que la position descendante soit au comptage de "15".
5	**Angle de décalage du bras de lecture**	1. Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".) 2. Ouvrir la boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive. 3. Refermer le boîtier supéreur. 4. Installer un disque.	Vis de réglage **(Fig. 19)**	1. Mettre en circuit l'interrupteur d'alimentation. 2. Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. 3. Tourner la vis de réglage de façon à ce que le centre de bras cincide avec la rainure en V de la tige d'élévation.
6	**Amplification servo-mécanique et tension d'écart de réglage**	1. Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".) 2. Ouvrir le boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive. 3. Raccorder le voltmètre à C.C. à la broche 5 (+) et à la broche 2 (—) de CN301. 4. Retirer le couvercle du dispositif détecteur.	VR501 (Amplification servo-mécanique) Plaquette à Vis. (Tension de décalage) **(Fig. 20)**	1. Mettre en circuit l'interrupteur d'alimentation. 2. Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. 3. Ouvrir le boîtier supérieur. 4. Déplacer complètement le bras de lecture vers la gauche. Puis, ajuster VR501 de telle sorte que la tension soit de 3,6V. (Amplification servo-mécanique) 5. Régler le bras de lecture au centre et s'assurerque la tension de sortie soit de 1,8V. 6. Si la tension n'est pas de 1,8V, ajuster la vis de telle sorte que la tension de sortie soit de 1,8V. (Tension de décalage)

■ MEDICIONES Y AJUSTE Español

• Equipos usados y estado del aparato

1. Oscilloscopio
2. Voltímetro de corriente continua
3. Disco (SFTR007) de ajuste
4. Poner el selector de sensibilidad del sensor óptico en "M".

Paso	Punto tratado	Preparativos para el ajuste	Porción a ajustar	Manera de hacer el ajuste
1	**Posición de arranque**	1. Abrir el gabine superior y colocar el disco. 2. Encender el interruptor de la corriente. 3. Empujar el interruptor de arranque ("Start").	Tornillo de regulación de la posición de descenso **(Fig. 16)**	1. Hacer girar el tornillo de regulación de la posición de descenso. Si se deposita en medio de una pieza, girar el tornillo hacia la izquierda.
2	**Ganancia del sensor**	1. Conectar el voltímetro de CC a 12 pernos (+) y 14 pernos (—) de IC401. 2. Colocar el disco de ajuste con el lado A mirando hacia arriba. 3. Cerrar el gabinete superior.	VR401 **(Fib. 17)**	1. Encender el interruptor de la corriente. 2. El brazo sonoro está en la posiciónde descanso. (Area negra del disco.) 3. Regular VR401 de manera tel que la tensión de salida sea de 8,5V ± 0,3V.
3	**Rasolución del sensor**	1. Conectar el osciloscopio a 9 pernos (+) y 14 pernos (—) de IC401. 2. Colocar el disco de ajuste con el lado A mirando hacia arriba. 3. Cerrar el gabinete superior.	VR402 **(Fig. 17)**	1. Encender el interruptor de la corriente. 2. Mantener el interruptor de salto F oprimido para mover el brazo sonoro. (La salida se suministra entre las piezas.) 3. Regular VR402 de manera tal que la salida de cresta entre las piezas sea de 3V ± 0,3V. **(Fig. 18)**
4	**Posición de descenso de aguja.**	1. Conectar el hilo conductor con clip a 6 pernos y 2 perno CN301 de tablero de circuitos de operation. (Cesa la operación de silenciamiento.) 2. Abrir el gabinete superior y sujetar el interruptor del mismo con cinta. 3. Colocar el disco de ajuste con el lado B mirando hacia arriba. 4. Cerrar el gabinete superior. 5. Conectar el aparato al amplificador. (Conectar los altoparlantes a los bornes para conexión de los mismos.)	VR302 **(Fig. 16)**	1. Encender el interruptor de la corriente. 2. Apretar la tecla de programa 2 seguida del interruptor de arranque. 3. Una vez que el brazo sonoro haya descendido, apretar la tecla de programa 2 con el fin de saltar. 4. Asegurarse de que la posición de descenso se encuentre en el número "15". 5. Regular VR302 de manera que la posición de descenso esté en conteo "15".
5	**Angulo de descentramiento del brazo sonoro**	1. Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".) 2. Abrir el gabinete superior y sujetar el interruptor del mismo con cinta. 3. Cerrar el gabinete superior. 4. Colocar el disco.	Tornillo de ajuste **(Fig. 19)**	1. Encender el interruptor de la corriente. 2. Mantener el interruptor de salto F oprimido para mover el brazo sonoro. 3. Girar el tornillo de ajuste de manera tal que el centro del brazo concuerde con la ranura en V de la barra de elevación.
6	**Canancia del sarvomecanismo y tensión de desnivel**	1. Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".) 2. Abrir el gabinete superioy y sujetar el interruptor del mismo con cinta. 3. Conectar el voltímetro de CC a 5 pernos (+) y 2 pernos (—) de CN301. 4. Remover la cubierta de sensor.	VR501 (Ganancia del servomecanismo) Tornillo (Tensión de desnivel) **(Fig. 20)**	1. Encender el interruptor de la corriente. 2. Mantener el interruptor de salto F oprimido para mover el brazo sonoro. 3. Abrir el gabinete superior. 4. Mover completamente el brazo sonoro a la izquierda. Luego, regular VR501 de manera que la tensión sea 3,6V. (Ganancia del servomecanismo.) 5. Colocar el brazo sonoro en el centro y asegurarse de que la tension de salida sea de 1,8V. 6. Si la tensión no es 1,8V, regular el tornillo de manera que la tensión de salida sea 1,8V. (Tensión de desnivel)

■ ADJUSTMENT POINTS

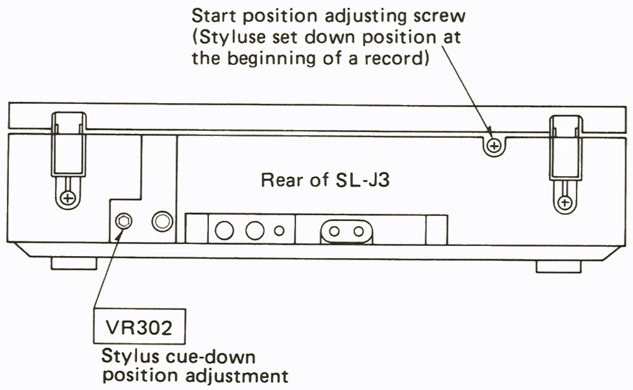

Start position adjusting screw
(Styluse set down position at
the beginning of a record)
Rear of SL-J3
VR302
Stylus cue-down
position adjustment

Fig. 16
(Abb. 16)

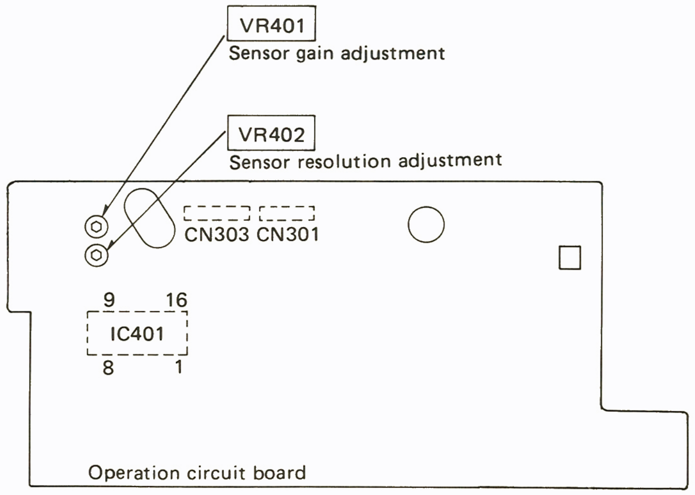


Fig. 17
(Abb. 17)

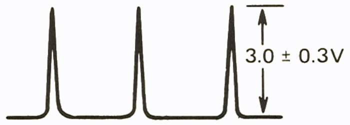


Fig. 18
(Abb. 18)

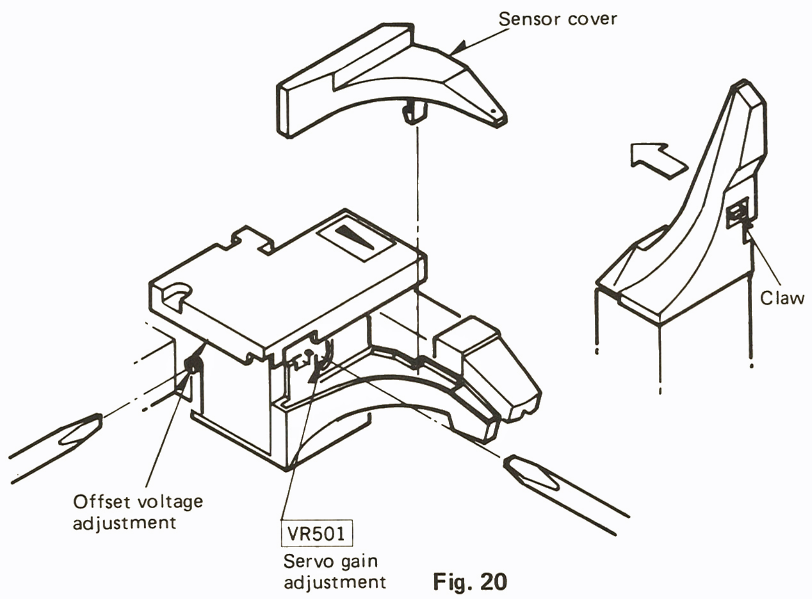


Fig. 20
(Abb. 20)

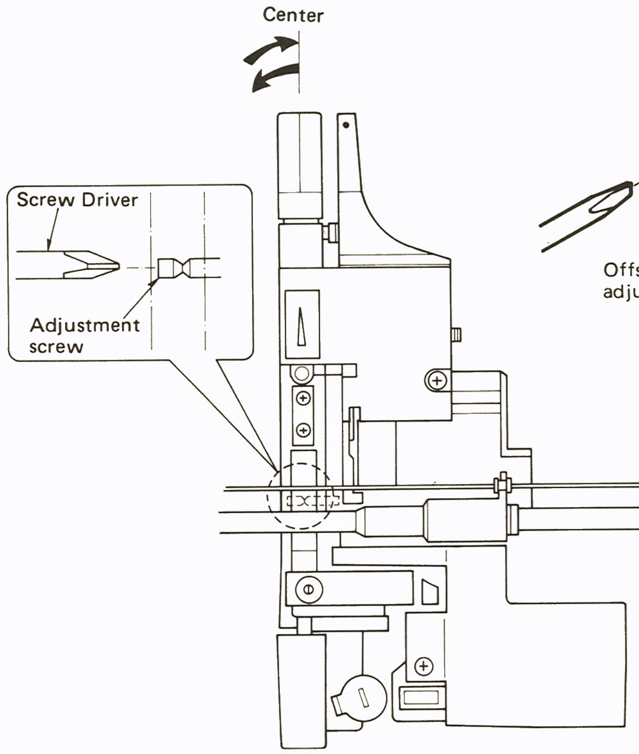


Fig. 19
(Abb. 19)

TROUBLE SHOOTING

1. How to use the repair table (Fig. 21)

① Remove the bottom board.
② Remove the main circuit board and connect the P.C.B. ground terminal to the chassis (Stator frame).
③ Put the unit on the repair table.
④ Fit the turntable platter and put on the turntable mat.
⑤ Put on the record and check the circuits from under the unit.

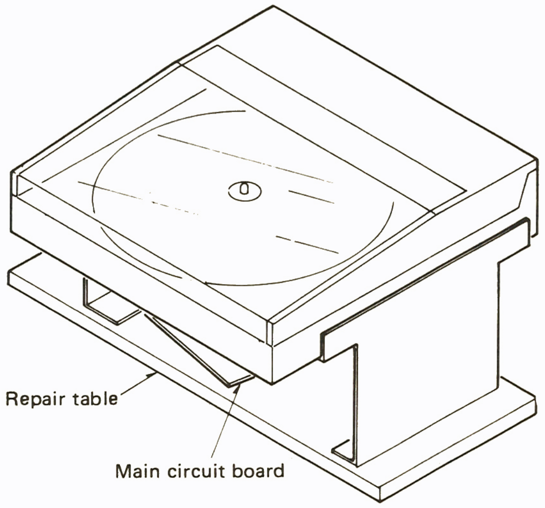


Fig. 21

2. How to raise the unit (Fig. 22)

Note: Turntable platter is not fixed on the center spindle. Take care so that the turntable platter will not come loose. Also, take care allow the set to fall down.

① Remove the bottom board.
② Completely open the upper cabinet.
③ Hold the cabinet (Reset) switch with tape.
④ Fit the turntable platter.
⑤ Raise the unit and check the circuits.

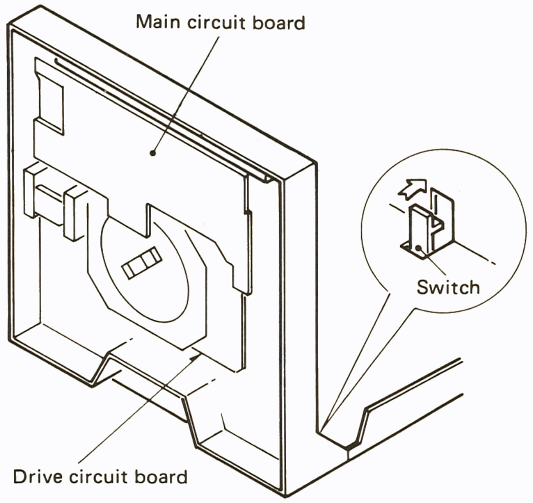


Fig. 22

3. How to turn over the unit (Fig. 23)

Note: This purpose is to check the voltage of each circuit during stop of the turntable.

① Remove the turntable platter and turn over the unit.
② Remove the bottom board.
③ Turn the power switch "on" and check the voltage.

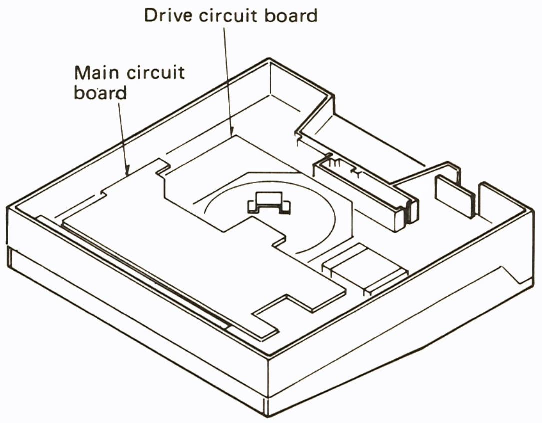
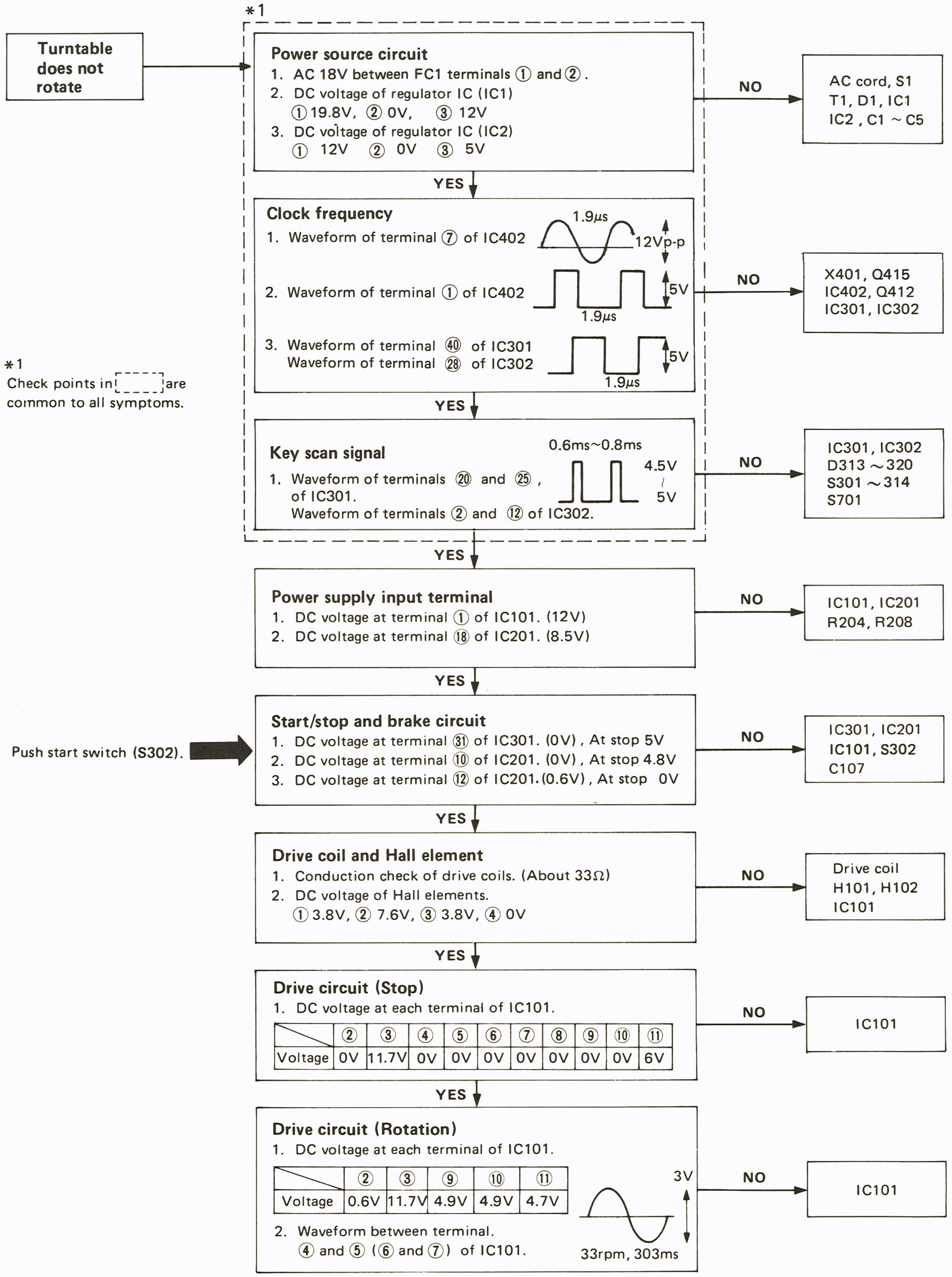


Fig. 23



Turntable does not rotate

*1

Power source circuit
1. AC 18V between FC1 terminals ① and ②.
2. DC voltage of regulator IC (IC1)
   ① 19.8V, ② 0V, ③ 12V
3. DC voltage of regulator IC (IC2)
   ① 12V ② 0V ③ 5V

NO → AC cord, S1, T1, D1, IC1, IC2, C1 ~ C5

YES

Clock frequency
1. Waveform of terminal ⑦ of IC402
2. Waveform of terminal ① of IC402
3. Waveform of terminal ㊵ of IC301
   Waveform of terminal ㉘ of IC302

NO → X401, Q415, IC402, Q412, IC301, IC302

YES

Key scan signal
1. Waveform of terminals ⑳ and ㉕, of IC301.
   Waveform of terminals ② and ⑫ of IC302.

NO → IC301, IC302, D313 ~ 320, S301 ~ 314, S701

*1
Check points in [ ] are common to all symptoms.

YES

Power supply input terminal
1. DC voltage at terminal ① of IC101. (12V)
2. DC voltage at terminal ⑱ of IC201. (8.5V)

NO → IC101, IC201, R204, R208

YES

Push start switch (S302).

Start/stop and brake circuit
1. DC voltage at terminal ㉛ of IC301. (0V), At stop 5V
2. DC voltage at terminal ⑩ of IC201. (0V), At stop 4.8V
3. DC voltage at terminal ⑫ of IC201. (0.6V), At stop 0V

NO → IC301, IC201, IC101, S302, C107

YES

Drive coil and Hall element
1. Conduction check of drive coils. (About 33Ω)
2. DC voltage of Hall elements.
   ① 3.8V, ② 7.6V, ③ 3.8V, ④ 0V

NO → Drive coil, H101, H102, IC101

YES

Drive circuit (Stop)
1. DC voltage at each terminal of IC101.

	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
Voltage	0V	11.7V	0V	0V	0V	0V	0V	0V	0V	6V

NO → IC101

YES

Drive circuit (Rotation)
1. DC voltage at each terminal of IC101.

	②	③	⑨	⑩	⑪
Voltage	0.6V	11.7V	4.9V	4.9V	4.7V

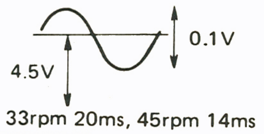
2. Waveform between terminal.
   ④ and ⑤ (⑥ and ⑦) of IC101.

NO → IC101

Unsatable rotation

FG amplifier circuit

1. Conduction check of FG coil.
2. Waveform of terminal ⑮ of IC201.

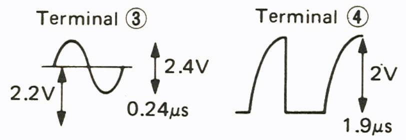


NO → FG coil
IC201, R203
R205, C201~203

YES ↓

Quartz oscillator circuit

1. Waveforms of terminals ③ and ④ of IC201.

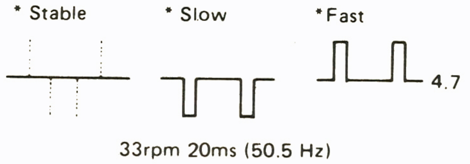


NO → X201, IC201
C204~206

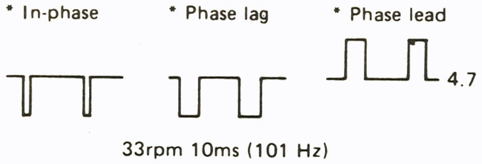
YES ↓

Speed and phase control circuit

1. Waveform of terminal ⑭ of IC201



2. Waveform of terminal ⑬ of IC201.



NO → IC201
IC101

Arm motor does not rotate

Motor control circuit

1. DC voltage at each terminal of IC302

	⑰	⑯	⑱
Stop	1.4V	1.5V	0V
Lead-in	0V	1.5V	5.0V
Return	1.4V	0V	5.0V

2. DC voltage at each terminal of IC401

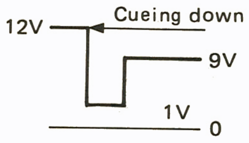
	①	⑯	③
Stop	0V	0V	0V
Lead-in	6.8V	0V	7V
Return	0V	6.8V	7V

NO → IC301, 401
Arm motor

Cueing down/ up does not work

Cueing control circuit

1. DC voltage at terminals ④ and ⑮ of IC302
   Terminal ④...... Only during cueing down (1.5V)
   Terminal ⑮ ...... During cueing and down (0.7V)
2. DC voltage of Q302 of collector



NO → IC301, 302
Q301, 302
Cueing plunger

■ RESISTORS AND CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. This "Ⓢ" mark is service standard parts and may differ from production parts.
4. Unless otherwise specified. All resistors are in OHMS (Ω) K = 1000Ω, M = 1000kΩ All capacitors are in MICROFARADS(μF), P = 10^{-6} μF.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERG	1	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	F : ±1%
ERG : Metal Oxide	1 : 1W	J : ±5%
ERX : Metal Film	2 : 2W	G : ±2%

ERD10TLJ☐☐☐ ——→ Chip type carbon (1/8W)
ERDS2TJ☐☐☐ ——→ Small type carbon (1/4W)
ECUV1H☐☐☐ ——→ Chip type ceramic capacitor

Capacitor Type	Voltage		Tolerance
	ECEA Type	Others	
ECEA : Electrolytic	0J : 6.3V	1H : 50V DC	J : ±5%
ECKD : Ceramic	1A : 10V	2H : 500V DC	K : ±10%
ECQM : Polyester	1C : 16V	05 : 50V	Z : +80%, −20%
ECCD : Ceramic	1E : 25V	1 : 100V	P : +100%, −0%
ECFR : Ceramic	1V : 35V		M : ±20%
ECEB : Electrolytic	1H : 50V		
ECQV : TF	1J : 63V		
	50 : 50V		

● RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R3 Ⓢ	ERG1ANJ151	150	R385	ERDS2TJ152	1.5K
R103	ERD10TLJ104U	100K	R386	ERDS2TJ154	150K
R104	ERX1ANJ2R7	2.7	R387	ERDS2TJ331	330
R105	ERD10TLJ270U	27	R389~392	ERDS2TJ223	22K
R201	ERD10TLJ273U	27K	R393, 394	ERDS2TJ333	33K
R202	ERD10TLJ394U	390K	R395	ERDS2TJ224	220K
R203	ERD10TLJ680U	68	R396	ERDS2TJ331	330
R204	ERD10TLJ151U	150	R401	ERDS2TJ103	10K
R205	ERD10TLJ223U	22K	R402, 403	ERDS2TJ123	12K
R207	ERD10TLJ102U	1K	R404, 405	ERDS2TJ474	470K
R208	ERD10TLJ680U	68	R406	ERDS2TJ104	100K
R301, 302	ERDS2TJ271	270	R407	ERDS2TJ122	1.2K
R303~311	ERDS2TJ681	680	R408	ERDS2TJ271	270
R318, 319	ERDS2TJ333	33K	R409	ERDS2TJ473	47K
R320	ERDS2TJ332	3.3K	R410	ERDS2TJ102	1K
R324	ERDS2TJ821	820	R413	ERDS2TJ152	1.5K
R325	ERDS2TJ101	100	R414	ERDS2TJ561	560
R326	ERDS2TJ271	270	R415	ERDS2TJ271	270
R327	ERDS2TJ101	100	R416	ERDS2TJ153	15K
R328	ERDS2TJ102	1K	R417	ERDS2TJ224	220K
R332	ERDS2TJ103	10K	R418, 419	ERDS2TJ333	33K
R333	ERDS2TJ101	100	R420	ERDS2TJ103	10K
R341, 342	ERDS2TJ332	3.3K	R421, 422	ERDS2TJ333	33K
R343, 344	ERDS2TJ103	10K	R423	ERDS2TJ563	56K
R346, 347	ERDS2TJ563	56K	R424	ERDS2TJ224	220K
R348	ERDS2TJ562	5.6K	R425	ERDS2TJ563	56K
R349, 350	ERDS2TJ272	2.7K	R426	ERDS2TJ153	15K
R351	ERDS2TJ103	10K	R427	ERDS2TJ224	220K
R352	ERDS2TJ101	100	R428	ERDS2TJ392	3.9K
R353	ERDS2TJ562	5.6K	R430	ERDS2TJ562	5.6K
R354	ERDS2TJ333	33K	R431	ERDS2TJ563	56K
R355, 356	ERDS2TJ101	100	R432	ERDS2TJ154	150K
R381	ERDS2TJ331	330	R501 Ⓢ	ERD25FJ271	270
R382	ERDS2TJ100	10	R502 Ⓢ	ERD25FJ391	390
R383	ERDS2TJ331	330	R503 Ⓢ	ERD25FJ561	560

● CAPACITORS

Ref. No.	Part No.	Value
C1~3 ⚠	ECQM1223KZ	0.022
C4 Ⓢ	ECEB1EU222	2200
C5 Ⓢ	ECEA1CU330	33
C6 Ⓢ	ECEA0JU470	47
C101 Ⓢ	ECEA1CU330	33
C102 Ⓢ	ECEA50ZR22	0.22
C103	ECQV05274JZ	0.27
C105, 106 ⚠ Ⓢ	ECEA1CN470S	47
C107 Ⓢ	ECEA50Z1	1
C201 Ⓢ	ECEA1AU470	47
C202 Ⓢ	ECEA50ZR22	0.22
C203 Ⓢ	ECQM1H683JZ	0.0068
C204	ECUV1H121JCM	120P
C205	ECUV1H330JCM	33P
C206	ECUV1H121JCM	120P
C207, 208 Ⓢ	ECEA1AU470	47
C301 Ⓢ	ECEA0JU470	47
C302 Ⓢ	ECEA1CU470	47
C303	ECFR1H104ZF	0.1
C304 Ⓢ	ECEA1HUR47	0.47
C305	ECFR1H104ZF	0.1
C401 Ⓢ	ECEA1HUR47	0.47
C402 ⚠	ECEA1CN100	10
C403, 404 Ⓢ	ECQM1H473JZ	0.047
C405 Ⓢ	ECEA1CU220	22
C411, 412 Ⓢ	ECQM1H104JZ	0.1
C413	ECFR1H104ZF	0.1
C414 Ⓢ	ECCD1H181J	180P
C415 Ⓢ	ECQM1H562JZ	0.0056
C601	ECFB1B104ZM	0.1
C701 Ⓢ	ECEA1CU101	100

REPLACEMENT PARTS LIST

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the columns of description stand for the quantity per set.
6. Ⓚ-marked parts are used for black only, while ○-marked parts are used for silver type only.
7. Parts other than Ⓚ-and ○-marked are used for both black and silver types.

Color	Area
(S)	[M] …U.S.A.
(S)	[MC]…Canada.
(S)(K)	[E] …Switzerland and Scandinavia.
(S)(K)	[EK]…United Kingdom.
(S)(K)	[XL]…Australia.
(S)(K)	[EG]…F.R. Germany.
(S)(K)	[EB]…Belgium.
(S)(K)	[EH]…Holland.
(S)(K)	[EF]…France.
(S)(K)	[Ei] …Italy.
(S)(K)	[EC]…Czechoslovakia.
(S)(K)	[XA]…Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(S)(K)	[XM]…Central South America.
(S)(K)	[PC]…European Audio Club.

Color

(S)…Silver Type
(K)…Black Type

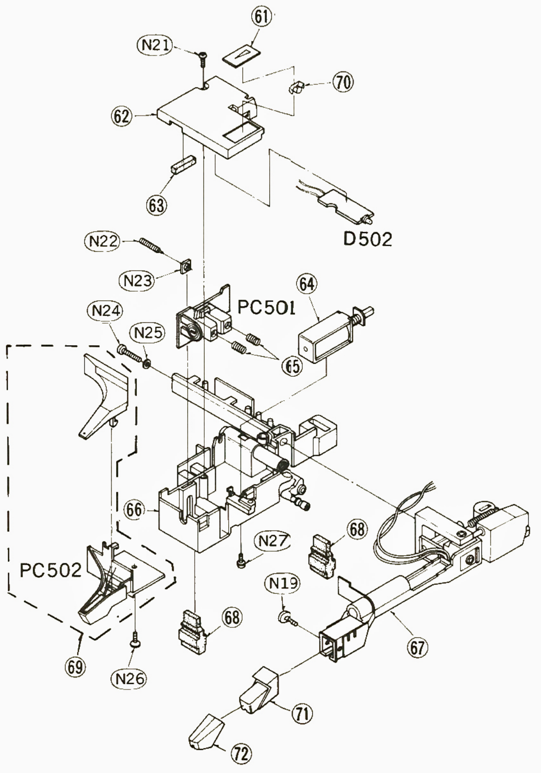
Caution:

Two types of muting relay (RL701) are used. When placing an order, confirm the caution mentioned in the explosion view on page 23.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	SVIUPC7812H	Regulator, 12V
IC2	AN78N05	Regulator, 5V
IC101	AN6638	Turntable Drive
IC201	AN6683	Turntable Control
IC301	MN1425FPP	Micro Computor
IC302	MN1402FPM	Micro Computor
IC401	AN6690	Arm Motor Drive & Blank Groove Det.
IC402	AN6912	Comparator
TRANSISTORS		
Q301	2SD636	LED Drive
Q302	2SD892	Cueing Control
Q303	2SD638	Muting Drive
Q305	2SD636	Synchro Rec Drive
Q306, 307	2SB641	Switching
Q311	2SB641	Speed Selector
Q364	2SD636	LED Drive
Q401	UN1111	Switching
Q402	2SD636	Switching
Q411 ~ 413	UN1111	V-I Convertor, Buffer & Switching
Q415	2SC2206	Clock Frequency OSC
DIODES		
D1 ⚠	SVDSIRBA20Z	Rectifier
D301, 302	SVDSLV31VC3F	Skip & Program Indicators
D303 ~ 311	SVDZJ02N02	Repeat & Program Indicators
D312	MA4062	Zener, 6.2V
D313 ~ 325	MA165	Switching
D342	SVDZJ02N02	Cue-Up Indicator
D343	SVDZJ02N03	Cue-Down Indicator
D345	MA165	Switching
D401	MA4068	Zener, 6.8V
D501 Ⓢ	MA162A	Switching
D502	SVDEBR3432S	Tonearm Position Indicator
D701 Ⓢ	MA162A	Switching
SWITCHES		
S1 ⚠	SFDSC02N02	Power Switch
S301 ~ 314	EVQQS405K	Stop, Start, Skip-Search, Cueing, Repeat & Program
S315	SFDSHSW0699	Speed Selector
S316	SFDSHSW0831	Sensitivity Selector
S317	SFDSHSW0699	Size Selector
S601	SFDSC02N03	Rest
S701	SFDSC05N01	Reset
S901 ⚠ [EK, XA, XM, PC]	SFDSHXW225-2	Voltage Selector
VARIABLE RESISTORS		
VR302	EVJE1AF20B54	Stylus Cue-Down Position Adj., 50kΩ (B)
VR401	EVN61AA00B55	Sensor Gain Adj., 500kΩ (B)
VR402	EVN61AA00B25	Sensor Resolution Adj., 200kΩ (B)
VR501	EVNM0AA00B14	Servo Gain Adj., 10kΩ (B)
RELAY		
RL701	SFDYQ11N02	Muting Relay
RL701	SFDYG5A237P	Muting Relay
CRYSTALS		
X 201	SVQSH41TR	4,193MHz
X 401	SVFCSB525P	Clock Frequency OSC
HALL ELEMENTS		
H101, 102	0H-002	Turntable Position Detecting
PHOTO INTERRUPTERS		
PC 501	0N1186	Offset Angle Sensor
PC 502	SFPABJ0205R	Blank Groove Sensor
PC 601	0N1161	Tonearm Position Sensor
POWER TRANSFORMER		
T1 [M] ⚠	SLT48DTL3B	Power Source
T1 [MC] ⚠	SLT48DT33C	Power Source
T1 ⚠ [EK, XA, XM, PC]	SLT57DTE14E	Power Source
T1 [XL] ⚠	SLT48DTE29E	Power Source
T1 ⚠ [Other areas]	SLT48DT34E	Power Source
FUSES		
F1 [MC] ⚠	XBA2F08NU100	250V, 800mA
F1 ⚠ [EK, XA, XM, PC]	XBA2C02T1B	250V, T 200mA
F1 ⚠ [Other areas]	XBA2C05T1B	250V, T 500mA
F2 ⚠ [EK, XA, XM, PC]	XBA2C06T1B	250V, T 630mA
COMPONENT COMBINATION		
RA301	EXBP84332K	3.3kΩ × 3
CABINET AND CHASSIS PARTS		
1 ○	SFADJ03N01E	Dust Cover Ass'y (Silver) (1)
1 Ⓚ	SFADJ03N21E	Dust Cover Ass'y (Black) (1)
1-1	SFKBJ02M01	Badge (1)
1-2	SFGZJ02N01	Cushion Rubber (2)
2 ○	SFUMQ06N08	Lutch, Dust Cover (Silver) (2)
2 Ⓚ	SFUMQ06N22	Lutch, Dust Cover (Black) (2)
3 ○	SFUMD04N07	Lutch, Dust Cover (Silver) (2)
3 Ⓚ	SFUMC02N14	Lutch, Dust Cover (Black) (2)
4 ○	SFGZQ06N01	Rubber, Lutch (Silver) (2)
4 Ⓚ	SFGZC02N01	Rubber, Lutch (Black) (2)
5	SFTGQ06N01	Turntable Mat (1)
6	SFWEC06N01	Adaptor 45r.p.m. (1)
7	SFQAC06N01	Spring, 45r.p.m. Adaptor (1)
8	SFTEQ05N01	Turntable Platter (1)
9	SFTMC07-01E	Rotate Magnet (1)
10	SFAUJ02N01	Bottom Board (1)
11	SFQCC05N01	Spring, Insulator (4)
12	SFGAC05N02	Insulator (4)
13	SFUMJ02N02	Rod, Power Switch (1)
14	SFUZJ03N01	Filter, Front Panel (1)
15 [M, MC] ○	SFKKJ03N01	Ornament Plate (Silver) (1)
15 ○ [Other areas]	SFKKJ03S01	Ornament Plate (Silver) (1)
15 Ⓚ	SFKKJ03S21	Ornament Plate (Black) (1)
16 ○	SFUMJ03N01	Front Panel (Silver) (1)
16 Ⓚ	SFUMJ03N21	Front Panel (Black) (1)
17	SFKTC06N04	Button, Power Switch (1)
18 ○	SFACJ03N01	Cabinet (Silver) (1)
18 Ⓚ	SFACJ03N21	Cabinet (Black) (1)
19	SFKTJ02N01	Button, Operation (1)
20	SFKTJ02N02	Knob, Selectors (3)
21	SFDJC01N01	Jack, Synchro Rec (1)
22 [EK, XA, XM, PC]	SFGCQ06X01	Cushion Rubber, Power Transformer (2)
22 [Other areas]	SFGCQ06N02	Cushion Rubber, Power Transformer (2)
23 ⚠ [M, MC, XL, PC]	SFDJHSC0491	AC Socket (1)
23 [XA, XM] ⚠	SFDJHSC04912	AC Socket (1)
23 ⚠ [Other areas]	SFDJHSC0516	AC Socket (1)
24	SFATQ06N01E	Hinge (2)
25 [M]	SFNNJ03M01	Name Plate (1)
25 [MC]	SFNNJ03C01	Name Plate (1)
25 [E, EC]	SFNNJ03S01	Name Plate (1)

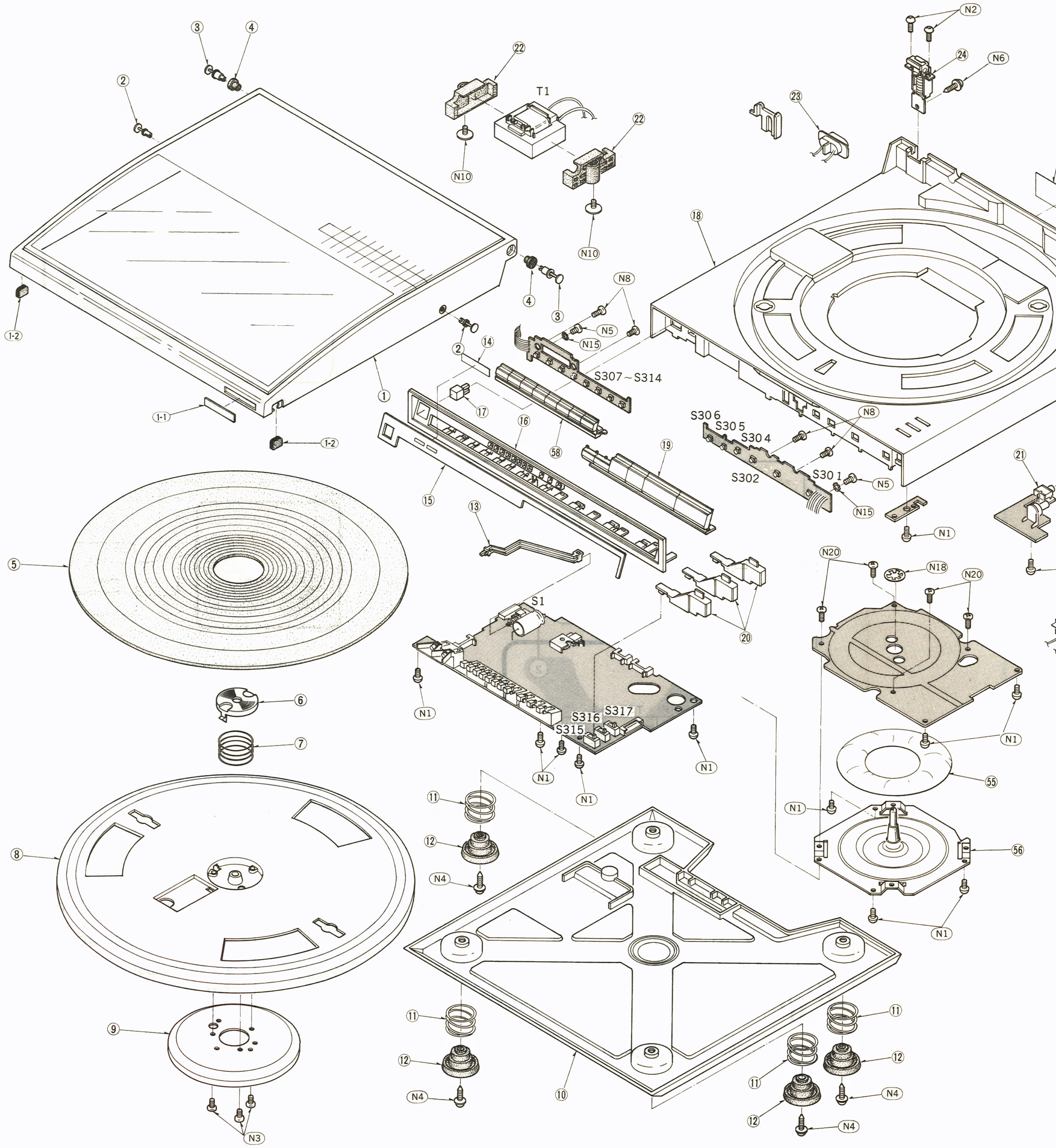
Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
25 [EK]	SFNNJ03G01	Name Plate (1)
25 [XA, XM]	SFNNJ03X01	Name Plate (1)
25 [XL]	SFNNJ03L01	Name Plate (1)
25 [PC]	SFNNJ03P01	Name Plate (1)
25 [Other areas]	SFNNJ03R01	Name Plate (1)
26	SFGKQ06N01	Rubber Cap (1)
27	SFUML11R03	Wheel, Tonearm Drive (1)
28	SFUZC05N02E	Rope Ass'y, Tonearm Drive (1)
29	SFUMV05N23	Cap, Pulley (1)
30	SFUMC05N22	Pulley (1)
31	SFGBC10-01	Belt, Tonearm Drive Motor (1)
32	SFMHJ02N01E	Motor Ass'y, Tonearm Drive (1)
33	SFUMQ06N06A	Worm Gear Ass'y (1)
34	SFUZC02N01	Rod, Rest Switch (1)
35	SFUMC02N05	Lever, Rest Switch (1)
36	SFQHQ34N22	Spring, Rest Switch Lever (1)
37	SFUMC02N06	Base, Rest Switch (1)
38	SFUMQ06N09	Holder, Rest Switch (1)
39	SFUPBL3N11E	Base, Tonearm Drive Motor (1)
40	SFUMC02N10	Rope Guide (1)
41	SFQA913-01	Spring, Adjustment Screw (1)
42	SFUMQ06N07	Clamper, Guide Rail (1)
43	SFGCQ06N01	Cushion Rubber, Guide Rail (1)
44	SFXJQ06N01	Guide Rail, Tonearm (1)
45	SFGCC05N05	Cushion Rubber, Guide Rail (1)
46	SFUMC02N12	Holder, Lead Wires (1)
47	SFGCQ06N04	Cushion Rubber, Dust Cover (2)
48	SFGZBL3N02	Spacer (1)
49	SFUMC05N15	Holder, Reset Switch (1)
50	SFQPC05N01	Spring, Reset Switch (1)
52	SFKTQ06N02	Knob, Cueing Down Position Control (1)
53	SFDJJ02N04E	Jack, Phono Output (1)
54	SFUKQ06N02E	Base Ass'y Tonearm (1)
55	SFMGQ34N01	Cover, Stator Coil (1)
56	SFMZC06N01R	Stator Frame Ass'y (1)
58	SFKTJ03N01	Button, Program (1)
TONEARM PARTS		
61	SFPAK0Q601	Indicator Plate (1)
62	SFPCS0Q601	Indicator Cover (1)
63	SFPGM0Q601	Rubber (1)
64	SFDZC05N01E	Solenoid Ass'y (1)
65	SFPSP00302	Spring, Adjustment (2)
66	SFPKD00301R	Base, Tonearm (1)
67	SFPAMJ0201A	Tonearm Ass'y (1)
68	SFPGML1101	Cushion Rubbber (1)
69	SFPABJ0205R	Blank Groove Sensor Ass'y (PC502) (1)
70	SFPCS00502	Light Concentrator (1)
71 [PC] only	EPC-P28S	★ Cartridge (1)
71 Except for [M, MC]	EPC-P33S	★ Cartridge (1)
72 [PC] only	EPS-28ES	★ Stylus (1)
72 Except for [M, MC]	EPS-33ES	★ Stylus (1)
SCREWS, WASHERS AND NUTS		
N1 Ⓢ	XTV3 + 8BFN	Screw, ⊕3 × 8 (12)
N2 Ⓢ	XTV3 + 6BFZ	Screw, ⊕3 × 6 (6)
N3 Ⓢ	XSN3 + 5S	Screw, ⊕3 × 5 (3)
N4	XTWS3 + 14QFYR	Screw, ⊕3 × 14 (4)
N5 Ⓢ	XTN3 + 6B	Screw, ⊕3 × 6 (2)
N6	XTWS3 + 14TFZ	Screw, ⊕3 × 14 (2)
N7	XTN16 + 10G	Screw, ⊕1.6 × 10 (1)
N8	XTV3 + 5J	Screw, ⊕3 × 5 (4)
N9	XTV3 + 20J	Screw, ⊕3 × 20 (1)
N10	SFXGQ06N01	Screw (2)
N11	XSN3 + 30S	Screw, ⊕3 × 30 (1)
N12 Ⓢ	XWE3D10	Washer, ϕ3 (1)
N13 Ⓢ	XWE3A8BW	Washer, ϕ3 (2)
N14	CSTW3	Washer (2)
N15 Ⓢ	XWC3B	Washer, ϕ3 (3)
N17	XNC3HS	Nut, ϕ3 (1)
N18	SFXWC06N02	Washer (1)
N19	SFPEV0Q601	Screw, Cartridge (1)
N20 Ⓢ	XTV3 + 6BFN	Screw, ⊕3 × 6 (4)
N21	XTN23 + 6JFZ	Screw, ⊕2.3 × 6 (1)
N22	SFPTN00301	Screw, Offset Adj. (1)
N23	SFXN623-1	Nut (1)
N24 Ⓢ	XSN3 + 12S	Screw, ⊕3 × 12 (1)
N25	XWA3B	Washer, ϕ3 (1)
N26	XTS26 + 6JFZ	Screw, ⊕2.6 × 6 (1)
N27	XYN2 + C4FZ	Screw, ⊕2 × 4 (1)
N28	XTN2 + 8B	Screw, ⊕2 × 8 (1)
ACCESSORIES		
A1 [M]	SFNUJ03M01	Instruction Book (1)
A1 [MC]	SFNUJ03C01E	Instruction Book (1)
A1 [EI]	SFNUJ03I01	Instruction Book (1)
A1 [EK]	SFNUJ03G01	Instruction Book (1)
A1 [XL, XA, XM]	SFNUJ03X01	Instruction Book (1)
A1 [EG]	SFNUJ03R01	Instruction Book (1)
A1 [EF]	SFNUJ03F01	Instruction Book (1)
A1 [PC]	SFNUJ03P01	Instruction Book (1)
A1 [Other areas]	SFNUJ03S01	Instruction Book (1)
A2	SFDHC05N01	Phono Output Cord (1)
A3	SFDLJ02N01	Ground Wire (1)
A4 [M, MC] ⚠	SFDAC05M01	AC Cord (1)
A4 [XL] ⚠	SFDAC05L01	AC Cord (1)
A4 [EK] ⚠	SFDAC05G02	AC Cord (1)
A4 [XA, XM] ⚠	SFDAC05X02	AC Cord (1)
A4 [PC] ⚠	SFDAC05N01	AC Cord (1)
A4 ⚠ [Other areas]	SFDAC05E02	AC Cord (1)
A5 [XA, XM] Only ⚠	SFDKI19118	2 Pin Plug (1)
PACKING PARTS		
P1 [MC, EF] ○	SFHPJ03C01	Carton Box (Silver) (1)
P1 ○ [Other areas]	SFHPJ03M01	Carton Box (Silver) (1)
P1 [EF] Ⓚ	SFHPJ03C21	Carton Box (Black) (1)
P1 Ⓚ [Other areas]	SFHPJ03M21	Carton Box (Black) (1)
P2	SFHHJ02N01	Pad, Front (1)
P3	SFHHJ02N02	Pad, Rear (1)
P4	SFHKC05N01	Clamper, Turntable Platter (2)
P5	SFHKQ06N01	Spacer, Tonearm (1)
P6	SFHSC06N01	Spacer, Dust Cover (1)
P7	SFYH45X60	Polyethylene Bag, Unit (1)
P8	SFHDN05M01	Sheet (1)
P9	SFYF32A35	Polyethylene Bag, Turntable Mat (1)
P10	SFHDD04N01	Pad, Turntable Mat (1)
P11	SFHZC02N02	Sheet, Dust Cover (1)

• Tonearm Parts



■ EXPLODED VIEWS

● Cabinet and Chassis parts



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1-1
1-2
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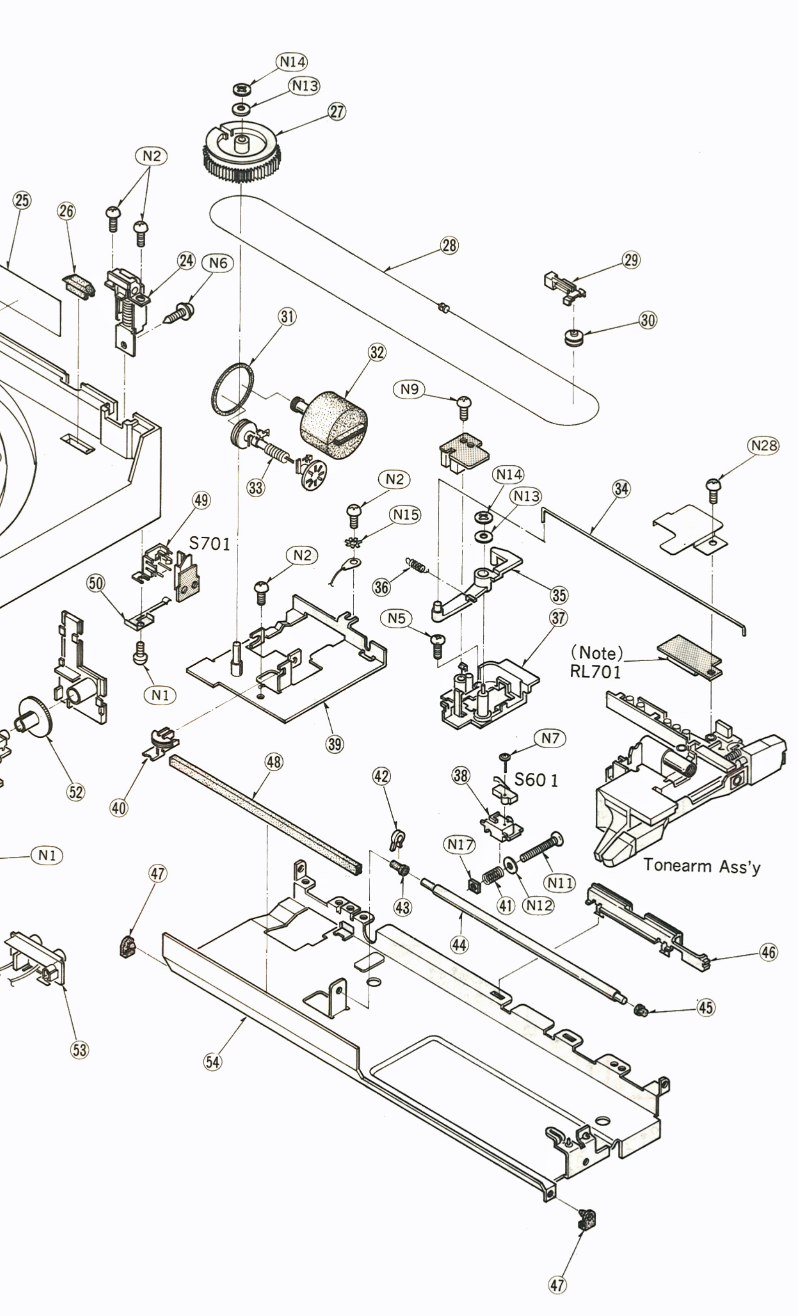
T1
N1
N2
N3
N4
N5
N6
N8
N10
N15
N18
N20
S1
S301
S302
S304
S305
S306
S307～S314
S315
S316
S317
55
56
58



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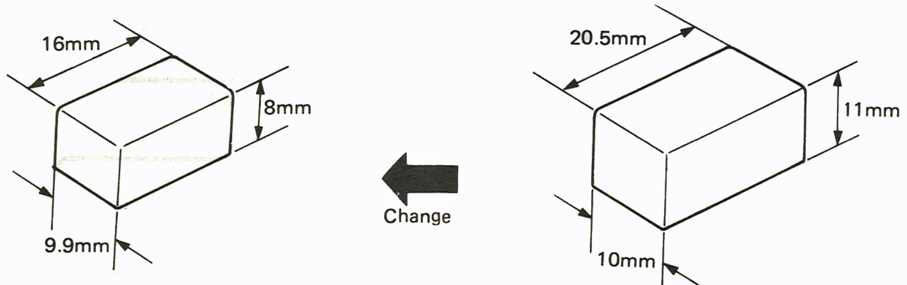
48
49
50
52
53
54
N1
N2
N5
N6
N7
N9
N11
N12
N13
N14
N15
N17
N28
S601
S701
(Note)
RL701
Tonearm Ass'y

Note



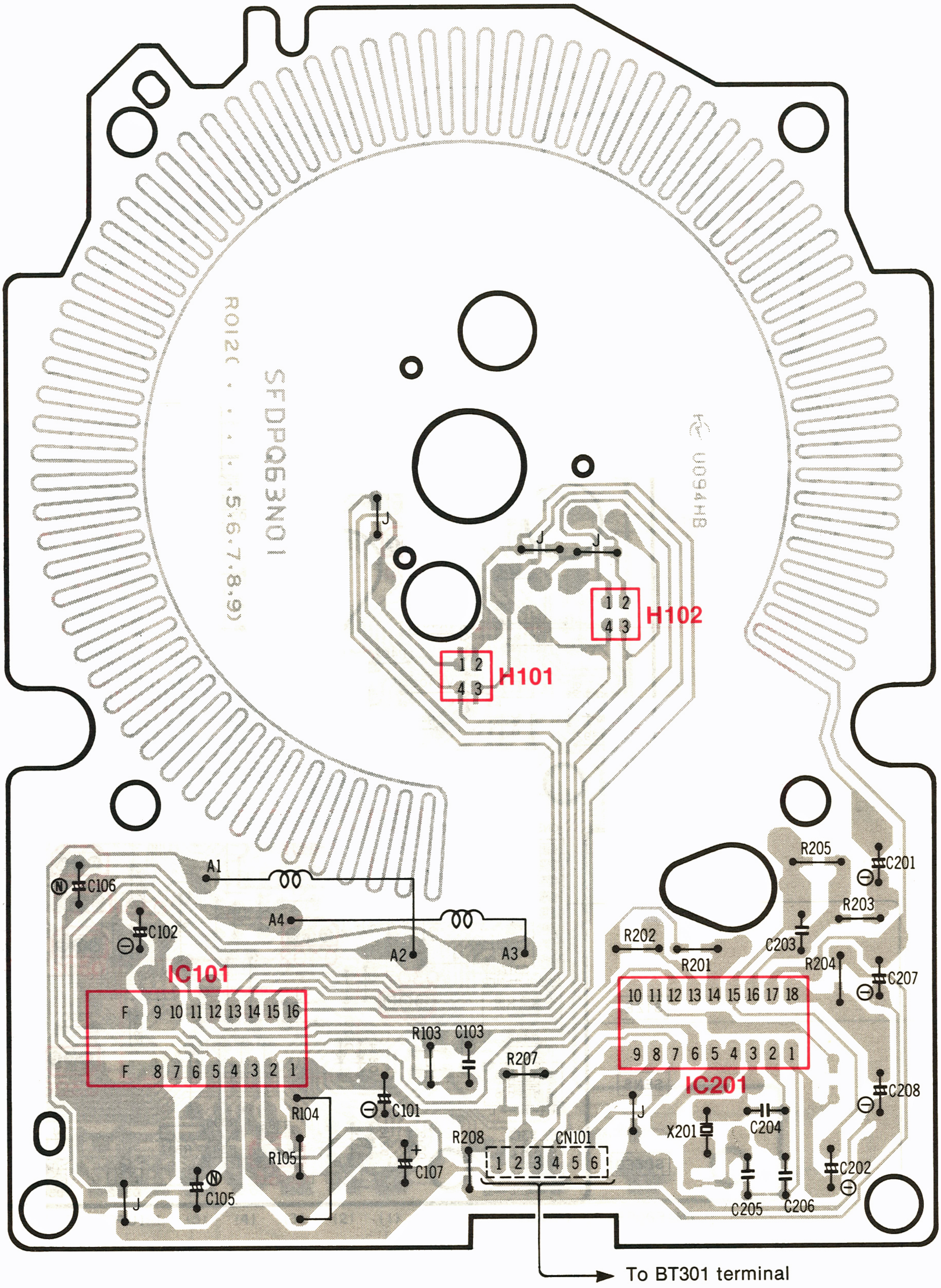
16mm
8mm
9.9mm
Change
20.5mm
11mm
10mm

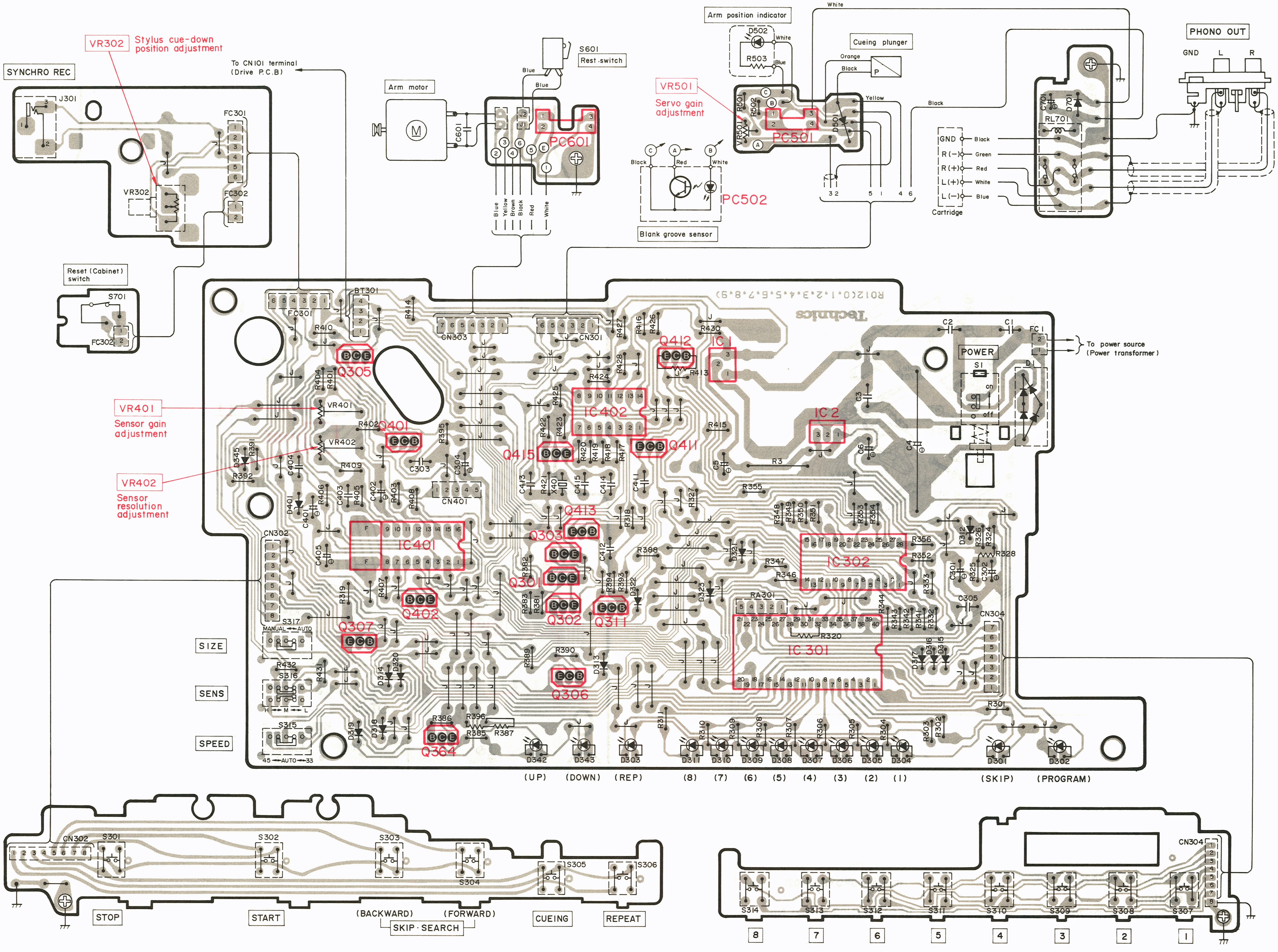
(Part No. SFDYG5A237P)

(Part No. SFDYQ11N02)

Caution:
Muting relay (RL701) is changed from Part No. SFDYQ11N02 to Part No. SFDYG5A237P in the course of production.
When placing an order for replacement parts, see the illustration given above.

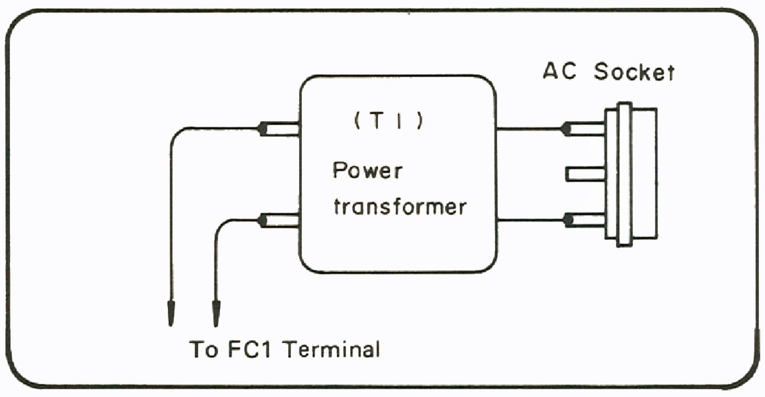
■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM


SFDPQ63N01
H101
1 2
4 3
H102
1 2
4 3
J
A1
A2
A3
A4
C106
C102
IC101
F 9 10 11 12 13 14 15 16
F 8 7 6 5 4 3 2 1
R103
C103
R207
C101
R104
R105
C107
C105
R208
CN101
1 2 3 4 5 6
R205
C201
R203
R202
R201
C203
R204
C207
IC201
10 11 12 13 14 15 16 17 18
9 8 7 6 5 4 3 2 1
C208
X201
C204
C202
C205
C206
To BT301 terminal

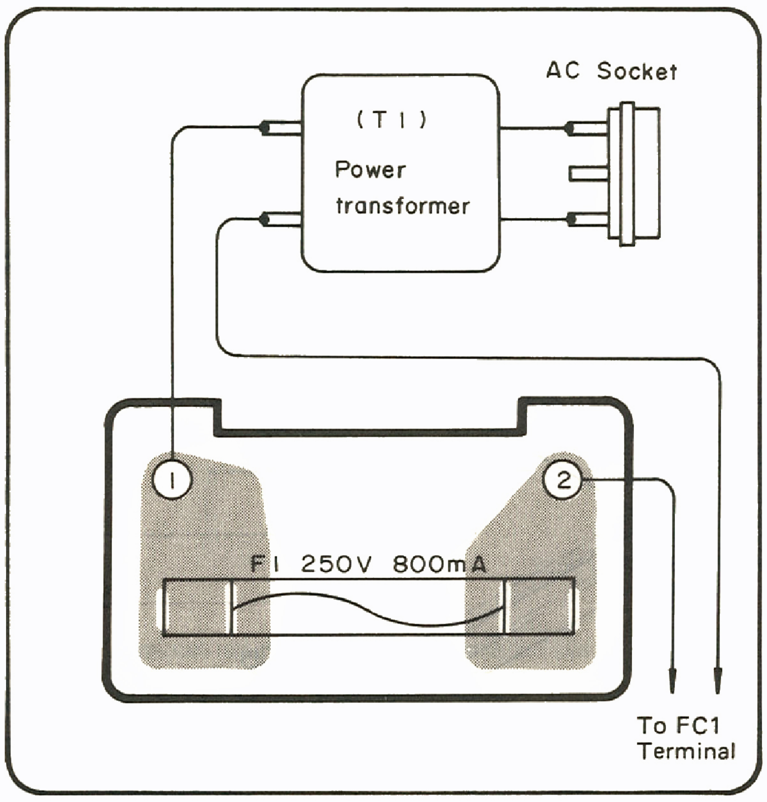

SYNCHRO REC
VR302
Stylus cue-down position adjustment
J301
FC301
FC302
To CN101 terminal (Drive P.C.B)
Reset (Cabinet) switch
S701
Arm motor
S601
Rest switch
PC601
C601
Blue
Yellow
Brown
Black
Red
White
Arm position indicator
D502
R503
Cueing plunger
VR501
Servo gain adjustment
R501
R502
PC501
D501
PC502
Blank groove sensor
Orange
Green
GND
R(−)
R(+)
L(+)
L(−)
Cartridge
PHONO OUT
L
R
C701
D701
RL701
BT301
CN303
CN301
CN302
CN401
CN304
Technics
R012(0.1,2,3,4,5,6,7,8,9)
To power source (Power transformer)
POWER
S1
on
off
D1
FC1
C1
C2
C3
C4
C5
C6
R3
IC1
IC2
IC301
IC302
IC401
IC402
Q301
Q302
Q303
Q305
Q306
Q307
Q311
Q364
Q401
Q402
Q411
Q412
Q413
Q415
VR401
Sensor gain adjustment
VR402
Sensor resolution adjustment
X401
RA301
S315
S316
S317
MANUAL
AUTO
45
33
SIZE
SENS
SPEED
D342
D343
D303
D311
D310
D309
D308
D307
D306
D305
D304
D301
D302
(UP)
(DOWN)
(REP)
(8)
(7)
(6)
(5)
(4)
(3)
(2)
(1)
(SKIP)
(PROGRAM)
S301
S302
S303
S304
S305
S306
STOP
START
(BACKWARD)
(FORWARD)
SKIP·SEARCH
CUEING
REPEAT
S314
S313
S312
S311
S310
S309
S308
S307
8
7
6
5
4
3
2
1

• Power source circuit

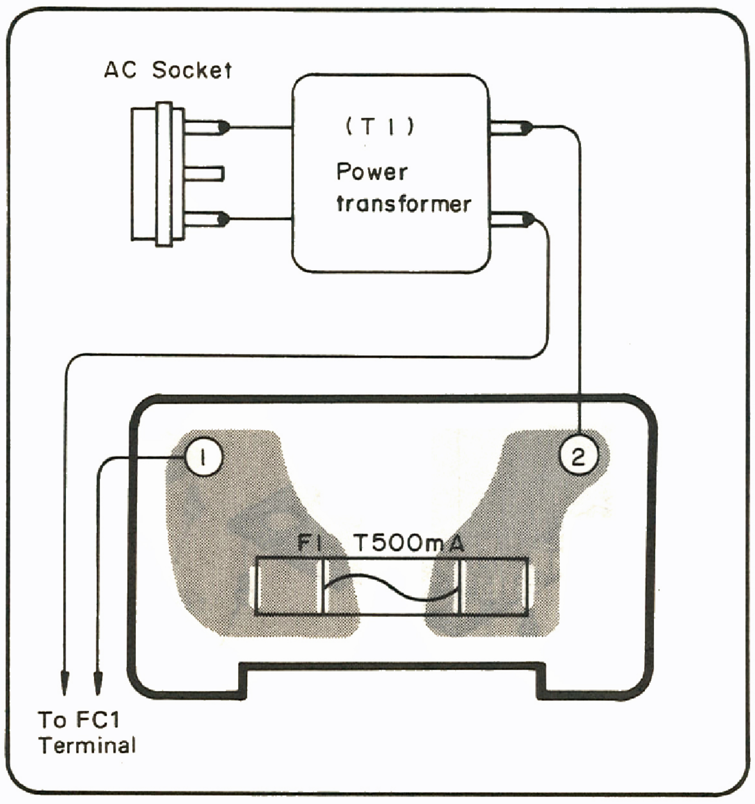
※ Product for U.S.A.


AC Socket
(T1)
Power
transformer
To FC1 Terminal

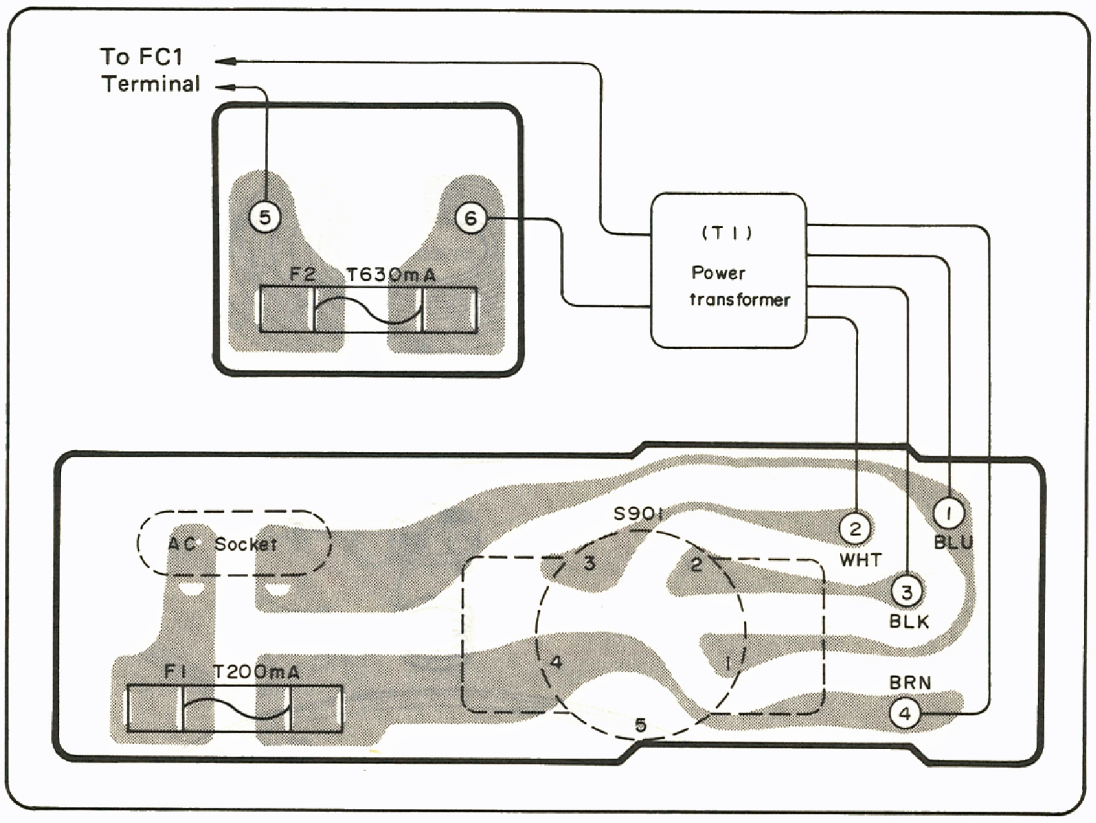
※ Product for Canada.


AC Socket
(T1)
Power
transformer
①
②
F1 250V 800mA
To FC1
Terminal

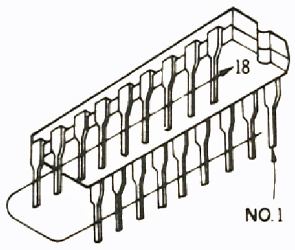
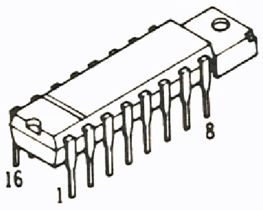
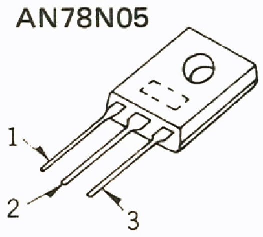
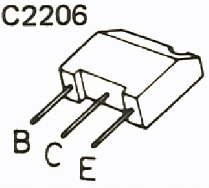
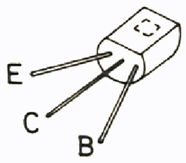
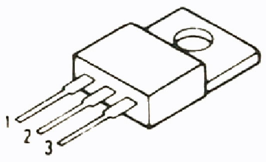
※ Product for Continental Europe and Australia.


AC Socket
(T1)
Power
transformer
①
②
F1 T500mA
To FC1
Terminal

※ Product for United Kingom, Southeast Asia, Oceania, Africa, Middle Near East, Central South America and European Audio Club.


To FC1
Terminal
⑤
⑥
F2 T630mA
(T1)
Power
transformer
S901
AC Socket
3
2
4
1
5
①
BLU
②
WHT
③
BLK
BRN
④
F1 T200mA

• Terminal guide of transistors, and IC's

		AN6638, AN6690	AN78N05
	AN6912 14 pin AN6683 18 pin MN1425 40 pin MN1402 28 pin		
2SB641, 2SD636, 2SD638, UN111, 2SC2206 	2SD8921 	AN7812 	

18
NO.1
8
16
1
1
2
3
B
C
E
E
C
B
1
2
3

• Product for MC only

FUSE REPLACEMENT

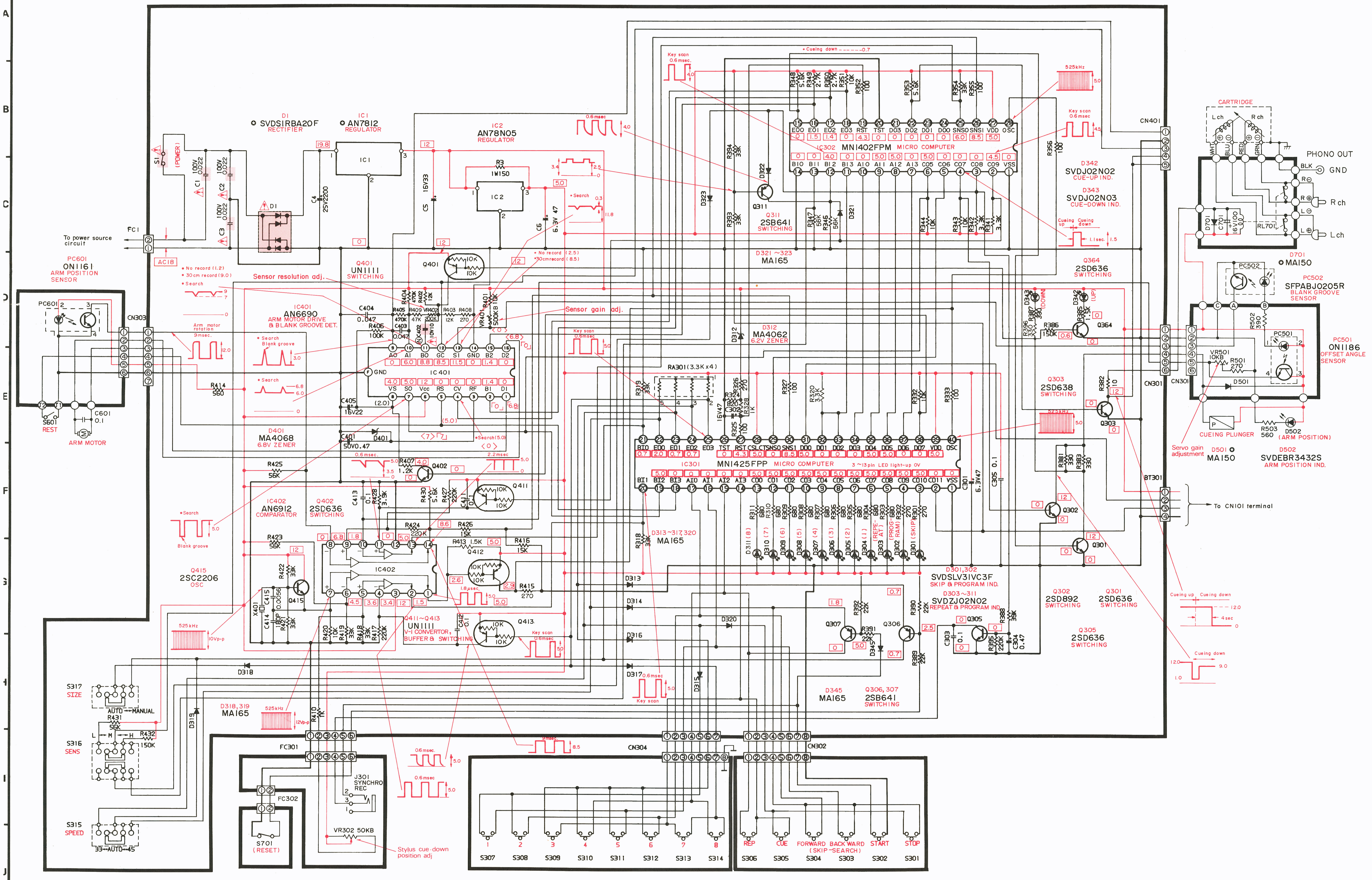
Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

FUSIBLE REMPLACEMENT

Le symbole qui se trouve près du fusible singifie un fusible à action rapide. Pour une protection contiue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with development of new technology.)



D1 SVDS1RBA20F RECTIFIER
IC1 AN7812 REGULATOR
IC2 AN78N05 REGULATOR
To power source circuit
FC1
PC601 ON1161 ARM POSITION SENSOR
CN303
S601 REST
ARM MOTOR
IC401 AN6690 ARM MOTOR DRIVE & BLANK GROOVE DET.
Q401 UN1111 SWITCHING
Sensor resolution adj.
Sensor gain adj.
D401 MA4068 6.8V ZENER
IC402 AN6912 COMPARATOR
Q402 2SD636 SWITCHING
Q415 2SC2206 OSC
Q411~Q413 UN1111 V-I CONVERTOR, BUFFER & SWITCHING
IC302 MN1402FPM MICRO COMPUTER
Q311 2SB641 SWITCHING
D321~323 MA165
D312 MA4062 6.2V ZENER
RA301 (3.3K×4)
IC301 MN1425FPP MICRO COMPUTER
D313~317,320 MA165
D318,319 MA165
D345 MA165
Q306,307 2SB641 SWITCHING
D301,302 SVDSLV3IVC3F SKIP & PROGRAM IND.
D303~311 SVDZJ02N02 REPEAT & PROGRAM IND.
D342 SVDJ02N02 CUE-UP IND.
D343 SVDJ02N03 CUE-DOWN IND.
Q364 2SD636 SWITCHING
Q303 2SD638 SWITCHING
Q302 2SD892 SWITCHING
Q301 2SD636 SWITCHING
Q305 2SD636 SWITCHING
CN401
CN301
BT301
To CN101 terminal
CARTRIDGE
PHONO OUT
GND
R ch
L ch
D701 MA150
PC502 SFPBAJ0205R BLANK GROOVE SENSOR
PC501 ON1186 OFFSET ANGLE SENSOR
CUEING PLUNGER
Servo gain adjustment
D501 MA150
D502 SVDEBR3432S ARM POSITION IND.
S317 SIZE
S316 SENS
S315 SPEED
FC301
FC302
J301 SYNCHRO REC
S701 (RESET)
VR302 50KB
Stylus cue-down position adj.
CN304
CN302
S307 S308 S309 S310 S311 S312 S313 S314
REP CUE FORWARD BACK WARD START STOP (SKIP·SEARCH)
S306 S305 S304 S303 S302 S301

Notes:

1. **S1** : Power switch in "**on**" position.
2. **S301** : Stop switch.
3. **S302** : Start switch.
4. **S303** : Backward skip/search switch.
5. **S304** : Forward skip/search switch.
6. **S305** : Cueing control switch.
7. **S306** : Repeat swtich.
8. **S307 ~ S314** : Program switch (Program key 1 ~ 8)
9. **S315** : Speed selector switch in "**auto**" position.
10. **S316** : Sensitivity selector switch in "**M**" position.
11. **S317** : Record size selector switch in "**auto**" position.
12. **S601** : Rest switch in "**off**" position.
13. **S701** : Cabinet (Reset) switch in "**on**" position.
14. **S901** : Voltage selector in "**220 - 240V**" position. (Product for [EK], [XA], [XM] and [PC] areas)
15. The voltage value and waveform are the standard values of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the bais of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
    - * ▭ is the voltage when turntable is stop.
    - * ( ) is the voltage when turntable is in rotation.
    - * ⌐ ⌟ is the voltage when tonearm in lead-in mode.
    - * < > is the voltage when tonearm is in return mode.
    - * (( )) is the voltage at 45 rpm.
16. ―― Positive voltage lines.
17. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

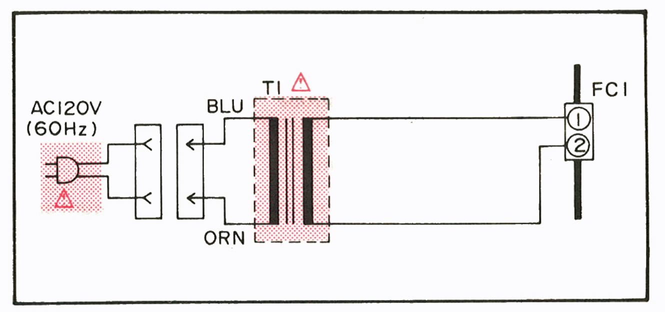
*The part No. of diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement parts list.

IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

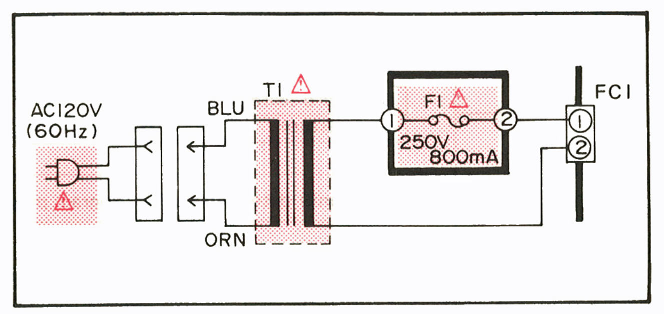
● Power source circuit

★ Product for U.S.A.



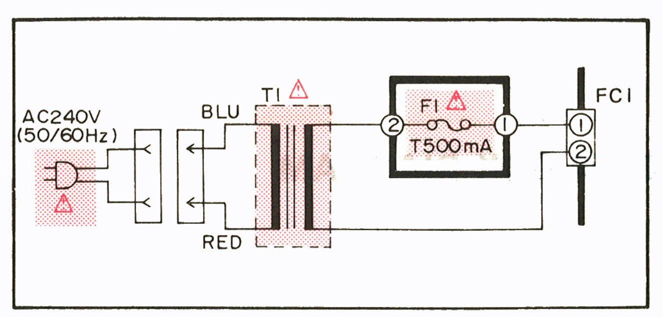
AC120V (60Hz)
BLU
T1
ORN
FC1

★ Product for Canada.



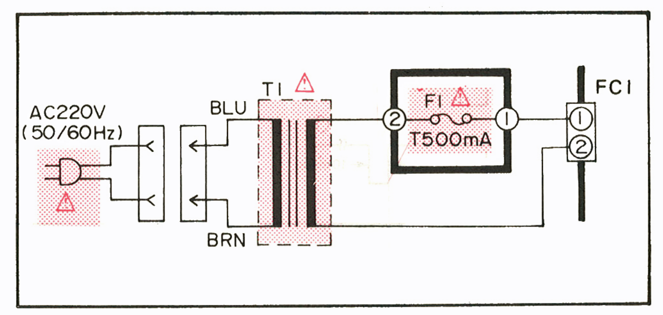
AC120V (60Hz)
BLU
T1
F1
250V 800mA
ORN
FC1

★ Product for Australia.



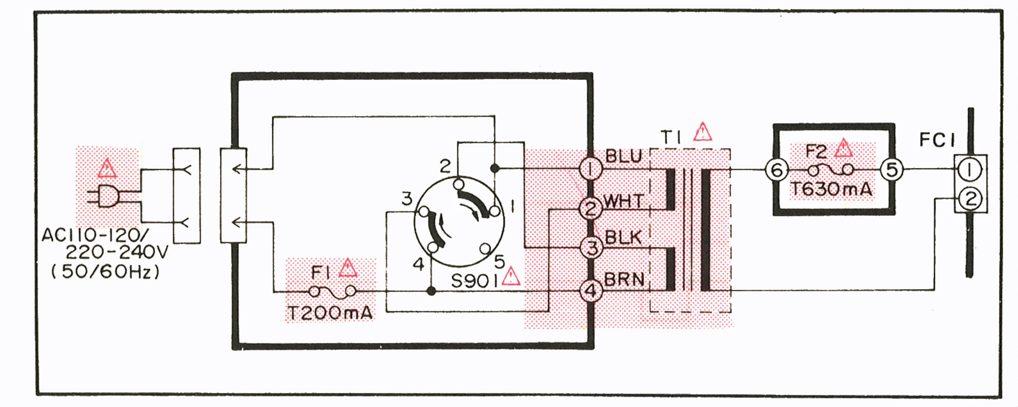
AC240V (50/60Hz)
BLU
T1
F1
T500mA
RED
FC1

★ Product for continental Europe



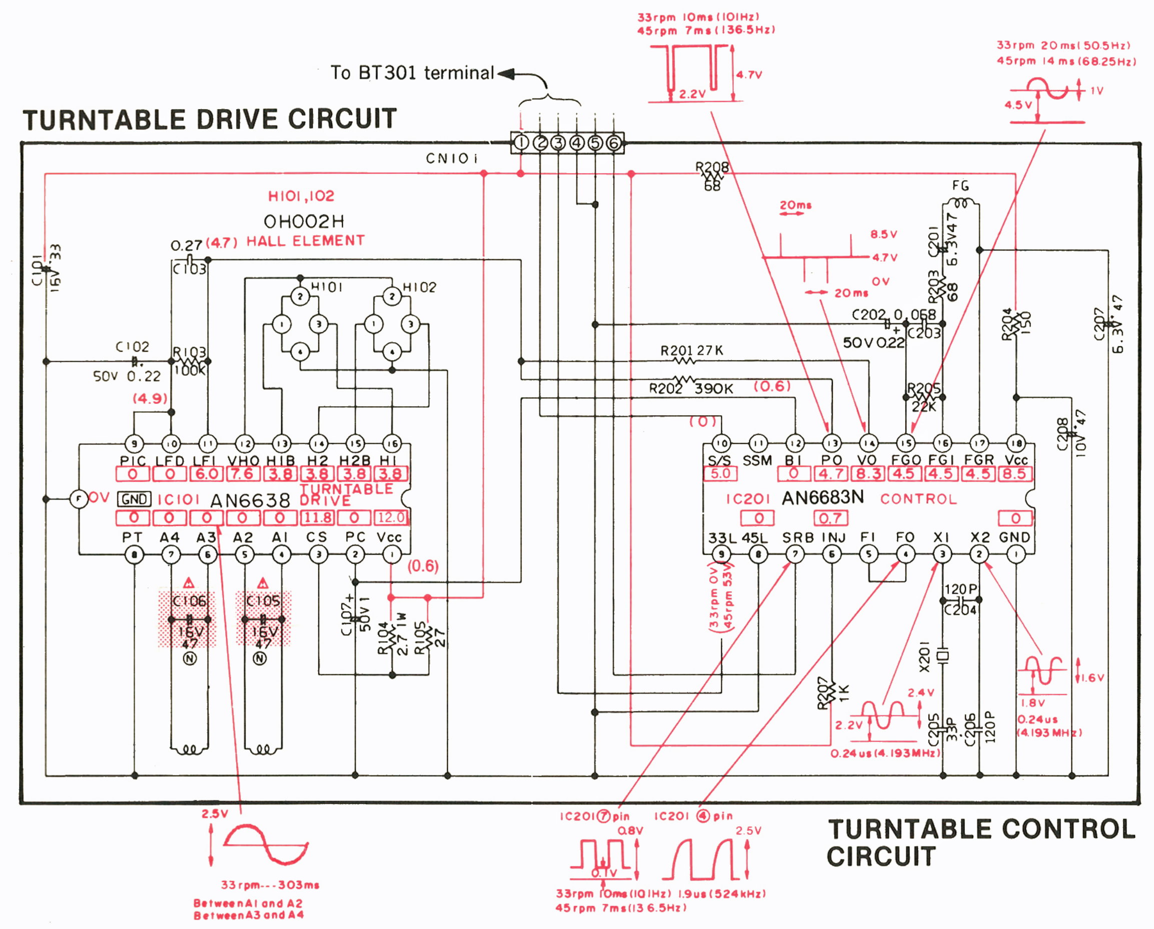
AC220V (50/60Hz)
BLU
T1
F1
T500mA
BRN
FC1

★ Product for United Kingdom, Southeast Asia, Oceania, Africa, Middle Near East, Central South America and European Audio Club.



AC110-120/220-240V (50/60Hz)
F1
T200mA
S901
BLU
WHT
BLK
BRN
T1
F2
T630mA
FC1

TURNTABLE DRIVE CIRCUIT



To BT301 terminal
CN101
H101,102 OHOO2H HALL ELEMENT
IC101 AN6638 TURNTABLE DRIVE
IC201 AN6683N CONTROL

TURNTABLE CONTROL CIRCUIT

- **Function of terminal of MN1402FPL**

No.	Symbol	Description
1	VSS	Ground terminal
2	CO9	Key scan strobe (Offset error angle read strobe) — Seansitivity and speed selector keys are read by key scan of CO8, CO9, BI1, BI2.
3	CO8	Key scan strobe (Synchro. rec. control, ON at "H")
4	CO7	Cueing control
5	CO6	Return detection in play mode (return at "H").
6	CO5	Pulse count end signal (end at "L")
7	AI3	• Tonearm motor and cueing (muting) control • The 4-bit signal from MN1425FPP causes the state to become as follows:
8	AI2	
9	AI1	
10	AI0	
11	BI3	Speed (blank) detection during program play (ON at "H")
12	BI2	Key scan Sensitivity and speed selector keys are read by key scan of CO8, CO9, BI1, BI2.
13	BI1	
14	BI0	Not used in this unit (Ground)

No.	7	8	9	10
Arm free	L	L	L	L
Forward search	L	L	H	L
Backward search	L	H	L	L
Brake (stop)	L	H	H	L

No.	7	8	9	10
Lead-in	H	L	H	L
Return	H	H	L	L

No.	Symbol	Description
15	EO0	Cueing control
16	EO1	Arm motor control
17	EO2	
18	EO3	
19	RST	Reset terminal (Micom is reset at "L")
20	TST	Test terminal
21	DO3	Not used in this unit
22	DO2	Muting control ("H" muting OFF)
23	DO1	Not used in this unit
24	DO0	
25	SNSO	Offset angle detection signal input terminal
26	SNSI	Arm position detection signal input terminal
27	VDD	Power supply
28	OSC	Clock oscillation (Frequency : 525 kHz)

No.	16	17	18
Arm free	L	L	L
Brake	H	H	L
Forward slow	H	L	L

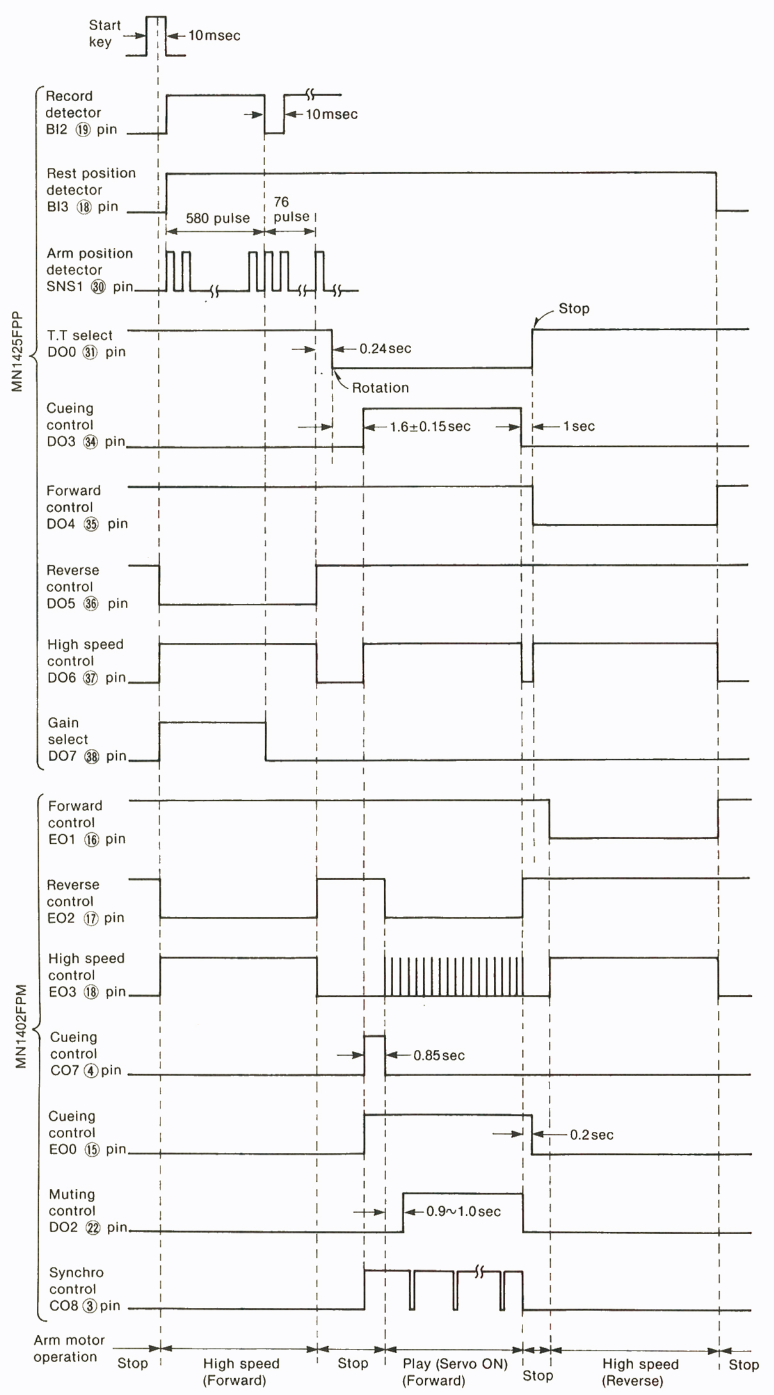
No.	16	17	18
Lead-In	H	L	H
Backward slow	L	H	L
Return	L	H	H

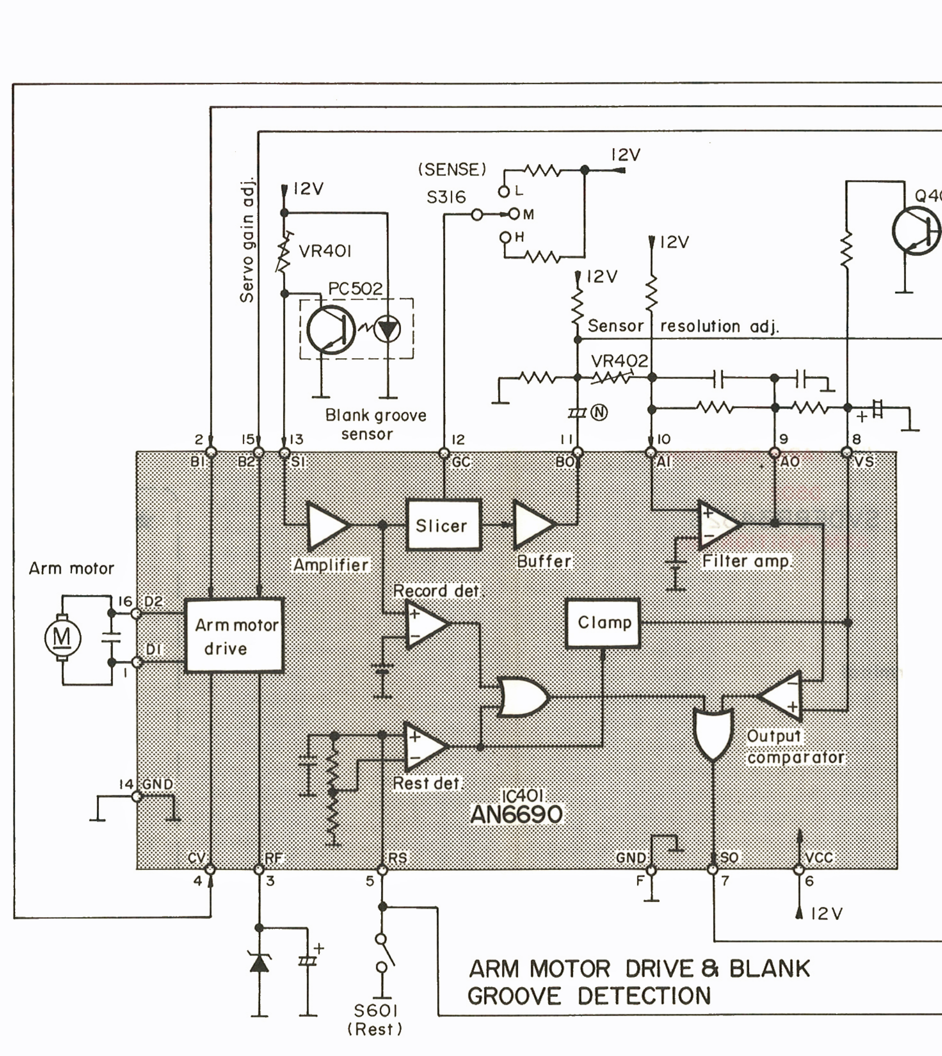
- **Function of terminal of MN1425FPP**

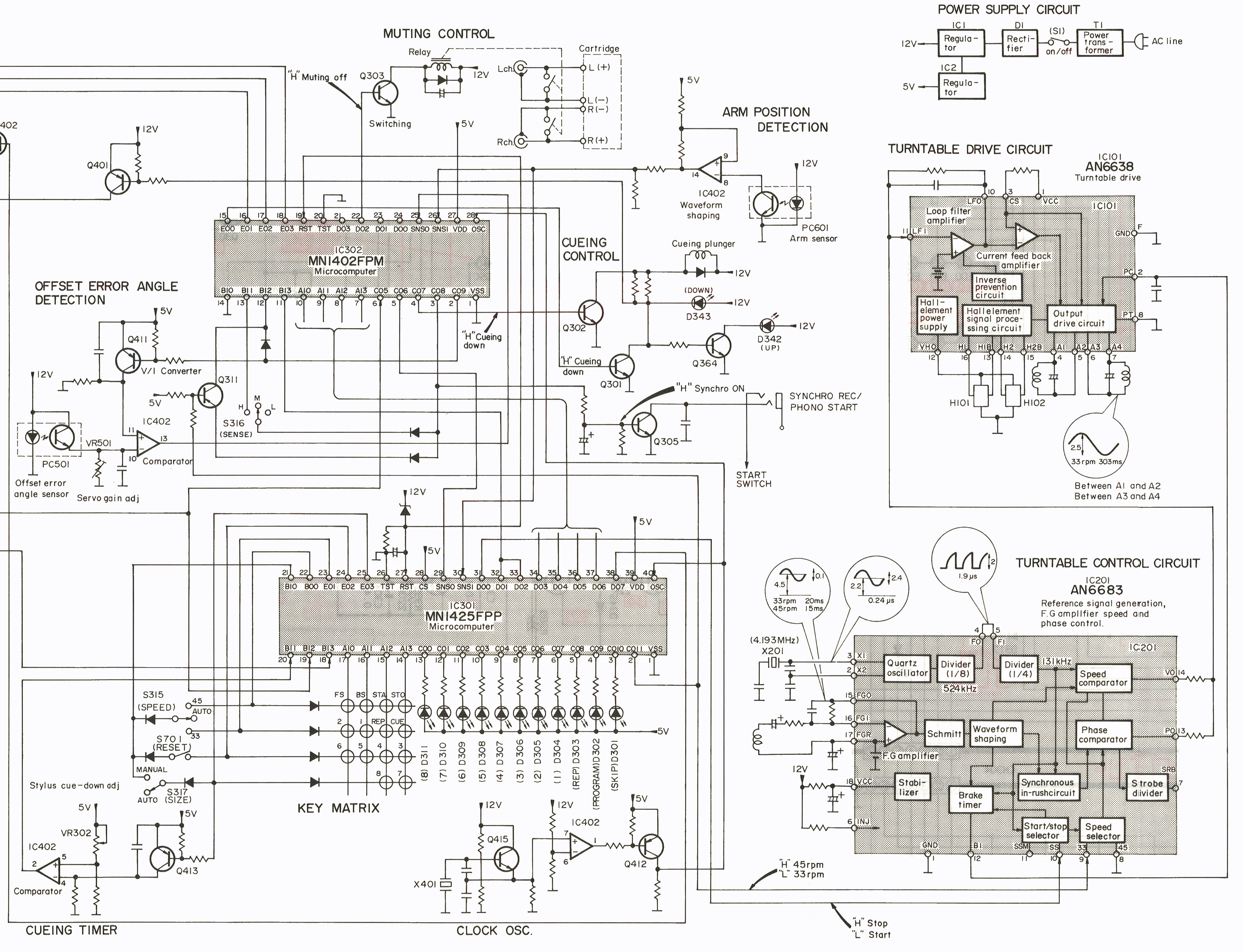
No.	Symbol	Description
1	VSS	Ground terminal
2	CO11	Turntable speed select (45 rpm "H", 33 rpm "L")
3	CO10	Skip indicator display — Lights up at "L"
4	CO9	Program indicator display
5	CO8	Repeat indicator display
6	CO7	Program No. 1 indicator display
7	CO6	Program No. 2 indicator display
8	CO5	Program No. 3 indicator display
9	CO4	Program No. 4 indicator display
10	CO3	Program No. 5 indicator display
11	CO2	Program No. 6 indicator display
12	CO1	Program No. 7 indicator display
13	CO0	Program No. 8 indicator display
14	AI3	Key (F skip, B skip, start, stop, repeat, cueing and program) are read by key scan of E port (pin No. ㉒ ~ ㉕).
15	AI2	
16	AI1	
17	AI0	
18	BI3	Rest position detection ("L" when tonearm is on rest)
19	BI2	• Blank pulse read (during cueing up) and blank width correction pulse count end (during cueing down) signa input terminal. • Blank pulse is active at "L". • Record detection 30 cm record is present / No record / 17 cm record is present • Blank width correction pulse countng is done until BI2 becomes "L" after cueing down.
20	BI1	Reading fo stylus lowering position adjust timer. E03 / BI1 / t Time to until BI1 is "H" after E03 becomes "H" just before cueing down of arm is read into microcomputer.
21	BI0	Turntable platter speed select, cabinet (rest)switch detection and record size select are performed by key scan (E port pin No. ㉒ ~ ㉕) and B10 key scan.
22	EO0	Keys (F skip, B skip, start, stop, repeat, cueing and program) are read by key scan of A port (pin No. ⑭ ~ ㊼), and turntable platter speed select, cabinet (reset) switch detection, and record size selector are performed by key scan of E port and BI0.
23	EO1	
24	EO2	
25	EO3	
26	TST	Test terminal
27	RST	Reset terminal (Micom is reset at "L")
28	CSLCT	Select terminal
29	SNS0	Return detection in play mode (return at "H")
30	SNS1	Arm position detection signal input terminal
31	DO0	Turntable start, stop select ("H" stop, "L" start)
32	DO1	Speed detection in program play mode. (ON at "H")
33	DO2	
34	DO3	Tonearm motor and cueing (muting) control
35	DO4	
36	DO5	
37	DO6	
38	DO7	Gain select in record size select mode (ON at "H")
39	VDD	Power supply
40	OSC	Clock oscillation (Frequency : 525 kHz)

■ BLOCK DIAGRAM

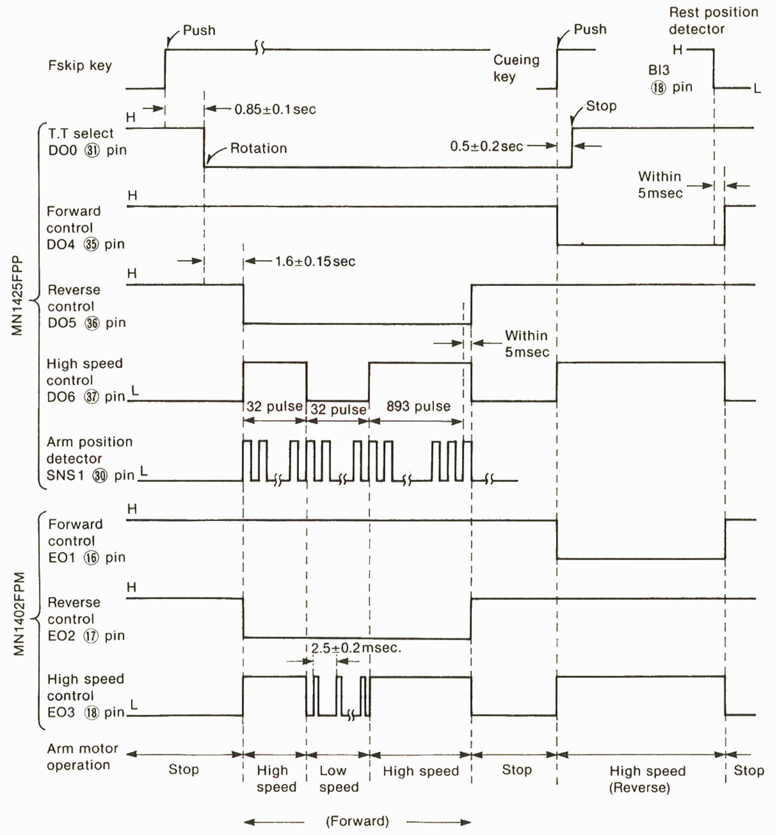
- **Time chart of 17 cm record (Lead-in)**






MUTING CONTROL
Relay
Cartridge
"H" Muting off
Q303
Switching
ARM POSITION DETECTION
IC402 Waveform shaping
PC601 Arm sensor
CUEING CONTROL
Cueing plunger
D343
D342 (UP)
Q302
Q301
Q364
Q305
"H" Cueing down
"H" Synchro ON
SYNCHRO REC/ PHONO START
START SWITCH
Servo gain adj.
VR401
PC502
Blank groove sensor
(SENSE) S316
Sensor resolution adj.
VR402
Q402
Q401
Arm motor
Arm motor drive
Amplifier
Slicer
Buffer
Filter amp.
Record det.
Rest det.
Clamp
Output comparator
IC401 AN6690
S601 (Rest)
ARM MOTOR DRIVE & BLANK GROOVE DETECTION
OFFSET ERROR ANGLE DETECTION
Q411
V/I Converter
Q311
IC402 Comparator
PC501
Offset error angle sensor
VR501
Servo gain adj.
IC302 MN1402FPM Microcomputer
IC301 MN1425FPP Microcomputer
S315 (SPEED)
S701 (RESET)
S317 (SIZE)
MANUAL
AUTO
KEY MATRIX
D311 D310 D309 D308 D307 D306 D305 D304 D303 D302 D301
(8) (7) (6) (5) (4) (3) (2) (1) (REP) (PROGRAM) (SKIP)
Stylus cue-down adj.
VR302
IC402 Comparator
Q413
CUEING TIMER
Q415
Q412
IC402
X401
CLOCK OSC.
POWER SUPPLY CIRCUIT
IC1 Regulator
D1 Rectifier
(S1) on/off
T1 Power transformer
AC line
IC2 Regulator
TURNTABLE DRIVE CIRCUIT
IC101 AN6638 Turntable drive
Loop filter amplifier
Current feed back amplifier
Inverse processing circuit
Hall element power supply
Hallelement signal processing circuit
Output drive circuit
H101 H102
33rpm 303ms
Between A1 and A2 Between A3 and A4
TURNTABLE CONTROL CIRCUIT
IC201 AN6683
Reference signal generation, F.G amplifier speed and phase control.
(4.193MHz) X201
Quartz oscillator
Divider (1/8)
524kHz
Divider (1/4)
131kHz
Speed comparator
Schmitt
Waveform shaping
Phase comparator
F.G amplifier
Stabilizer
Brake timer
Synchronous in-rushcircuit
Strobe divider
Start/stop selector
Speed selector
"H" 45rpm "L" 33rpm
"H" Stop "L" Start

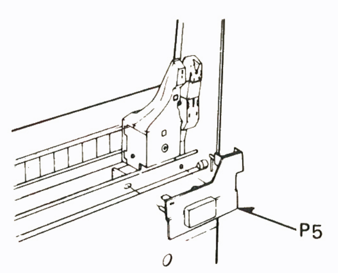
- **Time chart of 30 cm record (Manual search)**



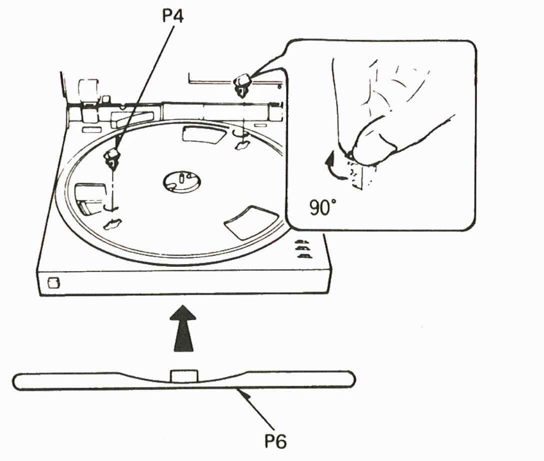
SL-J3

■ PACKING

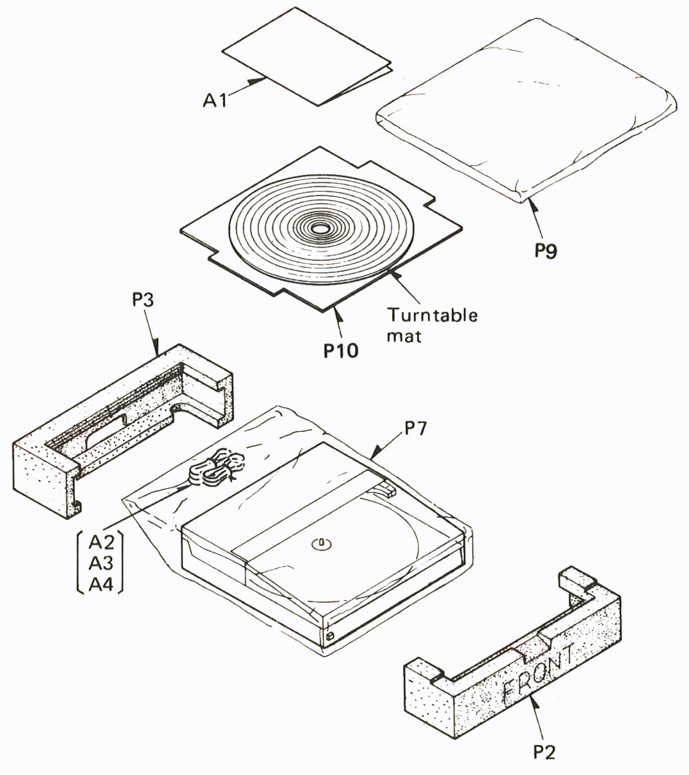
1. Open the upper cabinet and fit the spacer in place.



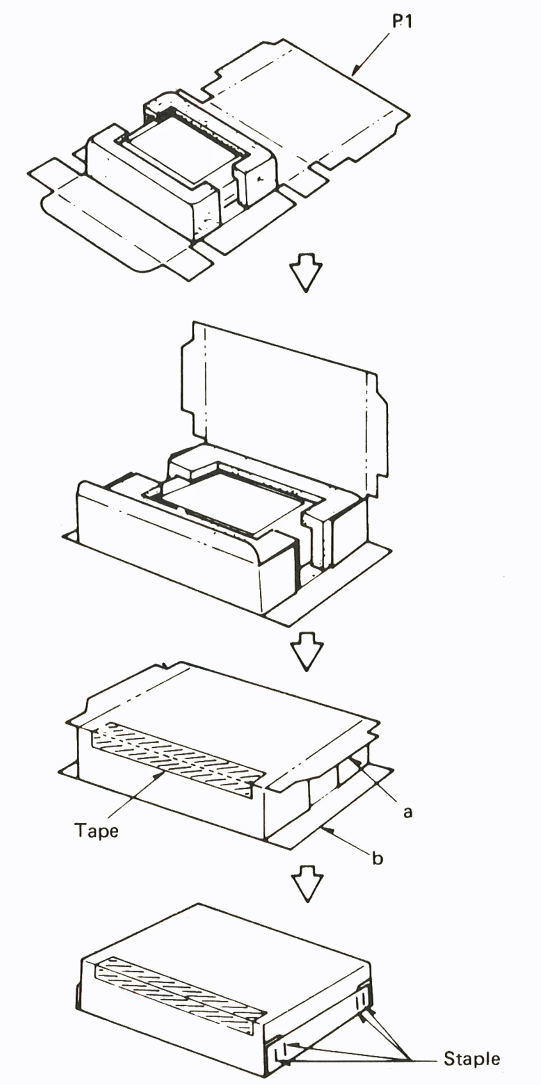
2. Fit the turntable platter clamper and dust cover spacer in place.



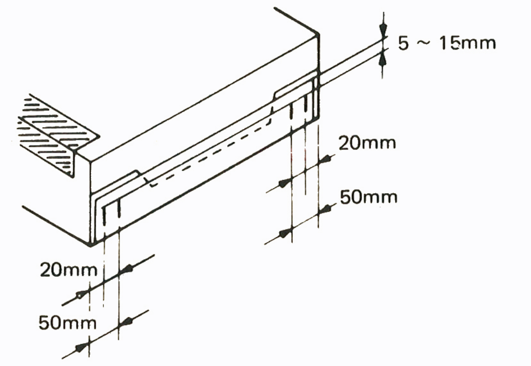
3. Put the into polyethylene bag, and make the package as shown below.


A1
P9
P10
Turntable mat
P3
P7
A2
A3
A4
FRONT
P2

4. Place the unit (with cushions attached) as illustrated.
5. Fold the flaps according to the line marks.
6. Seal the top with adhesive tape.
   *Use gum tape or adhesive cloth tape of 50mm wide at least.
7. For the edges, first fold the flap "a" and then flap "b", and staple. Remember to staple only flap "b". (Use 15 or 16mm staple)


P1
Tape
a
b
Staple

*Stapling positions are shown below.


5 ~ 15mm
20mm
50mm
20mm
50mm